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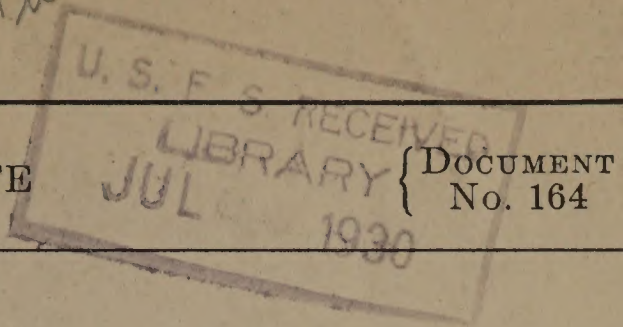
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SENATE



PUBLIC VALUES OF THE MOUNT HOOD AREA

REPORT OF A SPECIAL COMMITTEE APPOINTED BY
THE SECRETARY OF AGRICULTURE TO MAKE A
STUDY OF THE FEATURES OR QUALITIES OF
MAJOR PUBLIC IMPORTANCE OF THE
MOUNT HOOD AREA IN THE MOUNT
HOOD NATIONAL FOREST AND
THE PRINCIPLES WHICH
SHOULD GOVERN ITS
MANAGEMENT
TOGETHER WITH
A SUMMARY OF DATA COMPILED FOR THE MOUNT
HOOD COMMITTEE BY THE UNITED STATES
FOREST SERVICE, NORTH PACIFIC REGION



PRESENTED BY MR. McNARY

JUNE 9 (calendar day, JUNE 11), 1930.—Ordered to be printed

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REPORT OF THE
JOINT HOUSE

AND THE SENATE COMMITTEE APPOINTED BY
THE HOUSE OF REPRESENTATIVES TO MAKE A
COMPREHENSIVE SURVEY OF THE
MATERIALS OF THE
NATIONAL ARCHIVES
AND
THEir PRESERVATION

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LETTER OF TRANSMITTAL

DEPARTMENT OF AGRICULTURE,
Washington, D. C., June 4, 1930.

HON. CHARLES L. McNARY,
United States Senate.

MY DEAR SENATOR: The administration of the national forests is one of the important functions of the Department of Agriculture. Timber production and stream-flow protection were and still are the primary objectives of national forest management, but the rapidly changing order of our national life has emphasized other social and economic needs which can, in large measure, be met by the national forests without undue impairment or diminution of their major services. One of these needs is that of continued and adequate opportunity to study and enjoy the relatively unmodified manifestations of natural phenomena; to indulge in a wide variety of outdoor activities of an educational, inspirational, and recreational character.

Within the boundaries of the national forests there are, inevitably, many areas rich in scenic, geological, biological, and recreational interest. These, as a rule, are integrally related to the national forests of which they are parts, to a degree which renders their segregation and separate administration of doubtful practicability and economy. Maximum effectiveness of management and economy of public funds will, in the majority of such cases, be secured by continuing such areas as parts of the national forests, applying to them the special principles of management and development under which their unique qualities and values will be conserved and made publicly available in proper coordination with the use and management of the contiguous areas.

One of the outstanding areas of such character is that comprising and surrounding Mount Hood, in the State of Oregon. Its great potentialities for human service have long been recognized by this department, and it was given a special status by Secretary Jardine who, under date of April 28, 1926, formerly classified the area as one within which all national forest lands would be held for the use and enjoyment of the general public for recreational purposes, coordinately with the purposes for which the Mount Hood National Forest had been established.

Less than a year after the issuance of that order receipt of an application to construct a cableway to the summit of Mount Hood sharply raised a question as to the principles which should govern the future use and development of the area. The problem received extended consideration by the department; later a committee of representatives of local interest was appointed by Secretary Jardine to advise him as to the proper course for the department to pursue. The excellent and sincere study made by this committee, leading to the conclusion that the cableway should be authorized, did not,

however, embrace all aspects of the problem which, in Secretary Jardine's opinion, demanded analytical study and consideration.

Secretary Jardine, therefore, turned for advice to three men of conspicuous leadership in fields to which the problem related: Dr. John C. Merriam, president of the Carnegie Institution of Washington; Mr. Frederick Law Olmsted, whose land planning and landscape work commands national recognition; and Prof. Frank A. Waugh, of Amherst College, who for many years has served as collaborator and advisor to the Forest Service on questions relating to recreational uses. Quickly recognizing the social importance of the problem—the fact that it marked a new epoch in the public management of certain types of land—they agreed to undertake a study of the area and make available to the Department of Agriculture their views as to the principles which should govern its future use and development. Their formal report follows.

To be fully effective, a study such as has been made must be forward looking; it must take into account future cultural as well as commercial trends; it must be predicated upon a true conception and appreciation of the future needs of the people of our Nation. There are to-day few men better qualified to make such a study than those by whom it has been made. The gratitude of the people of the United States is due the members of the committee, who have given generously of their time and talents toward the solution of what eventually will be a pressing social problem.

To the Department of Agriculture the report of the committee will be invaluable. While circumstances preclude adherence to all of the findings of the committee, the Department of Agriculture will endeavor to give the fullest practical application to the principles suggested. It would be a serious mistake to commercialize and debase any great natural heritage, such as Mount Hood, without regard to the human service which may be derived from it in future ages. With our larger leisure and growing cultural standards, the place and part of nature as a source of inspiration and of mental and physical stimulus is significant and will be recognized by the Department of Agriculture in its administration of Mount Hood and all other like areas within the National Forests.

Sincerely yours,

ARTHUR M. HYDE, *Secretary.*

PREAMBLE

Hon. ARTHUR M. HYDE,

Secretary of Agriculture, Washington, D. C.

DEAR SIR: Under date of February 2, 1929, your predecessor in office, the Hon. William M. Jardine, addressed a letter to us, the undersigned, asking us to make a study of the Mount Hood area in the Mount Hood National Forest in Oregon, "designed to identify and interpret the features or qualities of major public importance, to develop the fundamental principles which should govern this department in their management, and to determine whether certain pending or proposed projects, as for example, the cableway to the summit of Mount Hood, the use of lakes for water storage, the proposed road and trail system, etc., are compatible or incompatible with the highest and best permanent realization of the potential public values of the areas."

On January 28, previous to the writing of this letter, two members of our committee (Doctor Merriam and Mr. Waugh) had a conference with Secretary Jardine in his office at which time these matters were discussed at large and the Secretary's intentions made clear.

Pursuant to these instructions, one member of the committee (Mr. Waugh) arrived at the Portland office of the Forest Service on June 22 and immediately took up the work of assembling data for the use of the full committee. Mr. Waugh also made several field trips to familiarize himself further with actual conditions on the land.

On August 4 the other two members of the committee (Doctor Merriam and Mr. Olmsted) arrived on the ground and took up an examination of the areas in question and a study of accumulated data. Visits by the whole committee were made to several parts of the Mount Hood Forest, as far as time would permit, especially to Lost Lake, Cloud Cap, Eden Park, the Loop Road, Olallie Butte, Olallie Lake, Government Camp area, and the Rhododendron summer homes area.

On August 6 this committee met with the members of a former committee organized under the chairmanship of Mr. Julius Meier, of Portland, which committee had reported to Secretary Jardine under date of August 29, 1928, upon somewhat the same matters now referred to us. At this joint meeting extended discussion developed more clearly the views of Mr. Meier's committee as already known from their written report.

The present committee moreover has found very useful a comprehensive report prepared especially for our use by the Portland office of the Forest Service and covering a wide range of information bearing upon all points under discussion. This excellent report deserves a word of special praise.

Finally, our committee has been generously assisted in our investigations, both in the field and in the office, by Mr. C. M. Granger, regional forester, and by Mr. T. H. Sherrard, supervisor of the Mount Hood Forest, to whom our cordial thanks are due.

Very truly yours,

FREDERICK LAW OLMSTED, *Chairman.*

JOHN C. MERRIAM.

FRANK A. WAUGH.

MEMORANDUM

FOR THE RECORD

DATE: February 1, 1939

TO: Mr. [Name] and Mr. [Name]
FROM: Mr. [Name]
SUBJECT: [Topic]
[Detailed memorandum text follows, discussing various matters related to the subject.]

On January 28, 1939, the writer of this memorandum, Mr. [Name], was present at a meeting of the [Committee] held at the [Location].

The meeting was held at the [Location] and was attended by Mr. [Name], Mr. [Name], and Mr. [Name]. The purpose of the meeting was to discuss the [Topic].

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REPORT OF THE COMMITTEE APPOINTED TO MAKE A STUDY OF THE MOUNT HOOD AREA

ARRANGEMENT OF REPORT

To "identify and interpret the features or qualities of major public importance" attached to various physical units of the area can not be done by describing such units in succession without constant reference to the various potential uses on which the importance and value of those features and qualities depend.

It seems best, therefore, to begin by a general discussion of various important types of use for which one or more parts of the area are well adapted, with only passing reference to specific localities and the special features thereof, and to follow this by a discussion of certain notable physical qualities attached to particular units and tending to determine their highest usefulness. Certain general principles and conclusions relating to management are brought out incidentally in the course of the above discussions; but others, requiring more extended considerations, are dealt with separately in later sections of the report in the light of all the facts previously presented.

I. TYPES OF USE, GROUP A

Important types of use that are generally recognized as major concerns of economic forest management, that involve values which can ordinarily be expressed with a fair degree of precision and completeness in economic terms, and that have been the subject of much technical study by the Forest Service

1. *Timber production and watershed protection.*—The value of the timber production possibilities of the area is definitely and almost completely measurable in economic terms, based on the market value of the physical product when exported from the area and exchanged for money or other economic goods, after subtracting the economic cost of protection, production, and exportation. The same is true of watershed protection as related to the value of water contributable from this area for use outside of the area.

These important kinds of values, derivable from many parts of the area, have been studied and discussed by officers of the Forest Service who are technically more competent to deal with such subjects than this committee, and we shall not attempt to traverse their findings in detail. With some minor marginal adjustments of the areas now considered by them valuable mainly for timber production and proposed by them to be managed primarily for that purpose; and, in the case of some areas to be harvested in the future, some modifications of present logging methods which they tell us are likely in any case to occur; it seems unlikely that the pursuit of these two values will come into any serious conflict with a wise policy for realizing the other kinds of values which we shall especially discuss in this report.

2. *Water storage and the development of water power.*—In regard to the possibilities of valuable water storage in this area and of diversions of water for development of power within the area, we do not find that any comprehensive and exhaustive study has been made. Preliminary investigations of certain specific projects have been made on the initiative of prospective users of stored water and have been checked by representatives of the Forest Service and the Federal Power Commission.

One such project, a reservoir in the Clackamas River Basin, is under preliminary permit to the Portland Electric Power Co. So far as we could judge, the execution of this project would not adversely affect the other kinds of values we shall especially discuss, and it might even, on the whole, somewhat increase the recreational values of the forest.

Another water storage project given preliminary consideration by the same company and abandoned by it as economically unsound at present was to raise the level of Olallie Lake, which is close to the divide between the Warm Springs River drainage and the Clackamas River drainage and itself has a very small drainage area, and to discharge the stored water into the Clackamas River. Applications for similar but more complicated projects have been pending before the Federal Power Commission for obtaining storage by raising and lowering the level of Lost Lake at the headwaters of a branch of the west fork of Hood River. In the case of each of these lakes, conversion into a reservoir by damming would cause very serious losses in the values obtainable from enjoyment of the landscape and from other forms of recreation. They are now very beautiful forest-bordered lakes, the marginal vegetation perfected by age-long natural adjustments to the present lake levels, which fluctuate very slightly with the seasons. Natural lakes as perfect as these for recreational purposes are so scarce in this region as to be peculiarly valuable. Their recreational value is incomparably greater than that of a reservoir surrounded by the raw edge of a new clearing in the forest and subject to a large draw-down. This fact is not rendered any less significant by the fact that, in the scarcity of good lakes, the addition of a wholly new reservoir-lake to the features of the forest, as in the case of the Clackamas Basin project above mentioned, might contribute more recreational value than it would destroy by the removal from its site of an equal area of ordinary timberland subject to logging.

Another water-power project, on the Zigzag River and its tributaries, is under preliminary permit to the Oregon-California Hydroelectric Co., involving the withdrawal of water from streams which contribute the largest element in the value of certain areas of great importance for summer residences, resorts, and other recreational and related uses, with a proviso that "no water shall be diverted from the Zigzag River and/or its tributaries when such diversion would reduce the flow in said Zigzag River at Rhododendron below the average discharge for the period between June 15 and September 15." The Portland office of the Forest Service reports that this provision is inadequate to protect the recreational interests involved in the operation, in that it does not guarantee low-water flow in the several individual streams, and that to make the protection effective there should be no diversion from any one of these streams when the flow in that stream is below its average summer flow—an opinion in which this

committee concurs. We have not attempted the very laborious task of analyzing the net value, if any, of various possible power developments on this watershed after charging up against their cost the losses which they would respectively involve in recreational and related values. The latter values, however, are plainly very large, enormously exceeding the capitalized value of the small annual charges now collected by the Forest Service from certain of the present beneficiaries, and they would be very seriously affected by substantial diminution of the summer flow of any of the streams.

It is obvious that the value of any practicable water storage, for any and all purposes, within the Mount Hood area, and the value of any practicable water-power diversions from the streams will increase with the increase of population in the surrounding area. It is equally obvious that the value of recreational and related opportunities within the area will greatly increase. It would seem highly expedient, instead of dealing piece-meal with such individual projects for water storage and water power development as may happen at any given moment to be commercially attractive to individual promoters, that a comprehensive study should be made for the Forest Service of all the opportunities for such developments within the several drainage basins of the region which seem likely to be economically attractive, not merely under present conditions but in the future, with a view to developing a consistent general plan, capable of execution in successive units by suitable agencies, that would ultimately realize the maximum values of this sort obtainable without sacrifice of greater values of other sorts.

Pending such a comprehensive plan of water utilization integrated with plans for utilizing the other major elements of potential value, and in view of the present uncertainty as to the relative future increase in the value of water storage and water power on the one hand and in the value of other possible uses of the area, it will often be very doubtful as to which kind of use of a given tract would in the long run prove capable of producing the greater net values. But in many such cases the development of a proposition for water power and/or water storage not only involves the investment of a large cash capital in construction work that would have little or no salvage value for any other purposes in case the proposition should ultimately prove economically unsound, but also involves the permanent destruction of natural resources of large potential value for other uses, such as timber production and/or recreation, whereas the present use of the land in question for the latter purposes would leave open the possibility of subsequently reversing the decision and carrying out the former proposition with no substantial waste of previous investments or other increase of capital chargeable against the project.

Where, as usual, this is the case and the execution of the water-power and/or water storage proposition involves the jeopardizing of very much larger capital values than does the other use, its adoption is justifiable only when it can be predicted with great assurance that the annual value of its product will more than pay interest and amortization charges both on its construction cost and on the capitalized value of those other prospective uses of the land which its construction will permanently prevent.

Unless and until that assurance is given by such a comprehensive investigation and plan as we suggest above, the principle thus out-

lined calls for the definite subordination of any water storage and/or water power possibilities that may exist in those parts of the area which give promise of large values of the kinds discussed in the next section.

3. *Mineral and grazing resources.*—These resources do not appear to be of great potential importance in this particular area and need no discussion by us to supplement their treatment in the report by the district office of the Forest Service.

II. TYPES OF USE, GROUP B

Certain other types of use of major public importance, especially including those of a recreational, inspirational and educational sort

1. *Economic relationship to uses of Group A.*—As a basis for a clear understanding and comparison of diverse kinds of values derivable from alternative possible uses of certain parts of the Mount Hood area, and of many other areas in the national forests, it is desirable to clear away some prevalent misconceptions attached to contrasting epithets commonly used in distinguishing uses characteristic of Group A and Group B; such as “practical” and “ideal,” “material” and “spiritual,” “economic” and “noneconomic” values.

The distinction between goods like those discussed in the foregoing section and those discussed in the present section is not that the former represent “material values” and the latter do not. All the values obtainable from such an area, even the most purely inspirational and subjective values, attach to and depend on some objective “material” features or qualities of the area; and every value, even the most obviously and narrowly economic value, depends for its importance on subjective human desires and preferences which in the last analysis determine the demand on which value depends.

Neither is the distinction one between “economic” and “noneconomic” values. It is true that the goods resulting from land uses of the types discussed in Group A, like timber growing, are so constantly and widely being marketed that their current economic values—that is to say, their generally accepted values in comparison with those of other goods where choice must be made between one and the other—are readily determinable with a high degree of precision and unanimity, expressed in market quotations, whereas many of the goods of Group B if marketed at all are not so frequently and generally marketed that widely recognized and definite economic values have been established for them. In other words, the economic values of the latter group are often more uncertain; but that is a very different thing from saying that they lack economic value. The economic values of ordinary pearls, for which there is a relatively wide, active, and steady market, are quite certainly and easily determinable. The economic values of exceptionally large and perfect pearls, which come to market only rarely, are very uncertain and fluctuating. But so far are the latter from lacking in economic value that every one of them unquestionably has greater economic value than any of the former. The only doubt is as to how much greater its economic value is than that of an ordinary pearl of a type so frequently exchanged that its market value is precisely determinable.

It often becomes necessary in developing the management plan of a national forest to choose between two mutually exclusive uses of a given piece of land, one of which would result in goods of rather definitely determinable economic worth—whether of the types discussed in Group A, such as timber production, or of certain types discussed in this Group B, such as leasing land for exclusive residential or recreational occupancy in a manner comparable with the leasing or sale of lots in competitive private subdivisions—while the other use would result in goods of a kind not well gauged as to their economic value by any current market transaction—such a use, for example, as the maintenance of an exceptionally beautiful sylvan landscape along an important road or a very enjoyable public camping place. It gets us nowhere to proceed as though the latter kinds of use were lacking in economic value simply because it is difficult or impossible to estimate that value with precision. They have values which some people are glad to obtain at the price of doing without some other real values, for which, in other words, they will, if necessary, exchange something of definite economic value and feel more than satisfied with the bargain.

The decision between two such alternative uses can be intelligently based only on a deliberate judgment as to whether the use for which no precisely measurable market value has been established will prove in the long run to be more valuable or less valuable than the other. The former is like a pearl to which no definite economic value can be precisely assigned because of its great difference from ordinary marketable pearls, but as to which it can often be said with entire confidence either that it is more valuable or that it is less valuable than a specified ordinary marketable pearl.

From the point of view of social economics, the basis for such a relative evaluation of that alternative use of a forest area which has the vaguer and more uncertain even though possibly greater value is essentially an estimate of whether a sufficient number of people would obtain such good from it that if they could be confronted with the necessity of making economic sacrifices rather than forego that good the aggregate economic price they would willingly pay for it would exceed the economic values obtainable from the alternative use of the land.

From the point of view of commercial economics, that estimate must be supplemented by an estimate as to whether the prospective beneficiaries can be practically confronted with that option in such a way as to induce them in fact to pay at least the full economic cost of what they get. We discuss elsewhere the advantages, disadvantages, and applicability in respect to various activities appropriate in forest areas of a commercial or quasi-commercial basis of operation, in which the individual beneficiaries or "ultimate consumers" who elect to enjoy the benefits are called on to pay prices intended to cover the economic cost of what they get, as contrasted with a communistic basis of operation in which the economic costs are borne by general taxation rather than by the special beneficiaries as such; but it is well to point out here two obvious advantages of the "commercial" methods—wherever they are not offset by special difficulties—and two conspicuous limitations: (1) The "commercial" method affords a constant check on erroneous estimates that various things of uncertain but supposedly great value are worth more than

enough to the beneficiaries to justify their cost, since only those to whom they are really worth more than the price will continue voluntarily to pay it; (2) where there is otherwise ground for reasonable differences of opinion as to the real value of a given use the hard fact of continued voluntary payment by the beneficiaries of prices amply sufficient in the long run to meet the costs not only furnishes very persuasive evidence that the values derived are great enough to justify the cost, but also greatly simplifies the financing of capital expenditures necessary for conservation, development, extension, or improvement of the use in question. On the other hand, (3) the collection of numerous petty charges may in some cases involve such annoyance as to reduce substantially the satisfaction—the total real values—otherwise obtainable from the uses in question, and (4) if the making of a commercial profit becomes the controlling and initiating motive in management, instead of a mere check on estimates of value and a financing device, it wholly distorts the relative importance of those uses which lend themselves easily to quick or large profits as against uses of equal or greater value to which the commercial mechanism is less readily or not at all applicable. The very creation of the national forests was due to the recognition that the uncontrolled commercial motives of private enterprise tended toward unsatisfactory results in such areas.

To sum up this explanation, the difference between the class of uses lightly touched on in Group A and the uses with which we are to deal in this section, and which are largely recreational, inspirational, and educational is not that the latter are as a whole lacking in economic value. The real difference is twofold:

The values arising from uses of the former class attach to goods which can be, and normally are, exported out of the area as marketable physical commodities and on which market quotations are generally obtainable that provide a basis for a definite and practically adequate measure of the values involved so far as they concern management of the area, leading somewhat readily to a technique of management firmly based on a numerical comparison of prospective values and prospective costs, whereas the values arising from the latter uses, which we are about to consider, attach to goods, both tangible and intangible, which range all the way from kinds that can be readily compared in value with goods having a definite market price to kinds that have values not directly measurable in any existing market whatever,¹ and which are in general inseparable from the area, in the sense that their values accrue to people through actual use of the area itself and that they are exportable only in the form of mental and physical changes in people who have actually derived from the scene some of those direct human satisfactions the purchase of which is the rational final objective of acquiring purely economic values.

2. *Relationship to enjoyment of scenery, primary and "service" uses.*—Another important characteristic common to nearly all the

¹ Goods at this extreme of the range are of course technically not "economic goods," in that they are not currently the subject of economic transactions which express people's opinion of their value in comparison with other goods; the classical illustrations of such "noneconomic" goods being the air we breathe, unmarketable though without it all other values would vanish. But even such things have potential economic values, which become actual and in some degree measurable whenever it becomes necessary for people to choose between one of them and something else.

types of use proper to this section is that the values are in some degree, directly or indirectly, dependent on the enjoyment of scenery.²

For consideration of this point and for other reasons it is convenient to divide the uses proper to this section roughly into those which may be regarded, like those of Group A, as primary uses and those which may be called service uses. The latter are such as owe their importance in this area mainly to the fact that they are incidentally necessary for or contributory to obtaining the satisfactions or values derived from the primary uses, and would have no place here except for the existence of the primary uses. They may be typified by such activities as the supplying of gasoline, food, water, lodging, sanitary facilities, etc., to people who come to the area in pursuit of one or more of the primary uses. Obviously the dependence of the value of these service-uses upon enjoyment of scenery, so far as it exists, is apt to be indirect; though it may be complete, as in the case of supplying gasoline to motorists who have no other purpose in visiting the area except to enjoy its scenery.

(a) The direct dependence of the value of primary uses of Group B on the enjoyment of scenery is most obvious and most complete in the case of that large class of users who circulate in the area by various means of locomotion—by public and private automobiles, by walking, and otherwise—occasionally pausing expressly to contemplate and enjoy particular scenes and consciously motivated in the main by their belief that merely to see and to be surrounded by such scenery as is peculiar to this area will give them pleasure. There are, of course, all gradations of the completeness of this direct dependence on scenic values, varying with the individuals and occasions as well as with the type of primary use. But, even in the case of those primary uses of Group B which depend in the first instance on other features or qualities of the area than its scenic qualities, those qualities are usually a large contributory factor of the values derived.

By way of example: Hunting, fishing, swimming, tobogganing, and such activities as mountain climbing when undertaken primarily for the sake of proving (or improving) one's physical condition or prowess or "beating" some record or competitor, and also many kinds of definitely scientific or broadly educational activities, are satisfactorily possible and of value in this area, in the first instance, solely because of the presence here of specific physical features or conditions which are necessary to those activities which are not peculiar to this area, and which are not necessarily associated with the pleasant qualities of its scenery. But it is a generally recognized fact that for most people any of these uses gives much greater satisfaction—results in greater value—if carried on under appropriately agreeable scenic surroundings than under neutral or disagreeable surroundings. Most of the people who might otherwise engage in such activities in this area could, and probably would, pursue them not here but elsewhere if the scenic surroundings in this area had been

² "Enjoyment of scenery" is a loose term, but taken broadly probably conveys the intended meaning as well as any other. It is not intended to refer to some theoretical abstraction of esthetic philosophy which treats appreciation of "pure beauty" (whatever that is) independently of the rest of human life; but with that familiar, widespread, and very real "enjoyment of scenery" by everyday people in which there is an inextricable overlapping and fusion of the most emphatically "esthetic" qualities with various theoretically quite distinguishable sources of satisfaction arising from the "scene of their activities." Thus the satisfaction of mere "childish curiosity" or of that "scientific interest" of which it is the rudimentary form, or of other "intellectual" interests, or of the "exhilaration of sport" or play, when the scene of such an activity is beautiful almost inevitably merges into and becomes a part of something which derives a large part of its value from esthetic elements and is sufficiently recognizable to common sense under the name "enjoyment of scenery."

by nature unattractive instead of notably fine, or if the area were to be so mismanaged as to make the scenery generally disagreeable by such radical artificial changes as can sometimes result from logging, fires, building operations, advertising signs, and the excessive wear and tear of crowds.

(b) The values of the so-called "service uses" are in most cases at least indirectly dependent on enjoyment of scenery because they are directly dependent on primary uses which themselves depend at least in part on that enjoyment, as in the business of supplying and obtaining gasoline (which is strictly a means to some other end, involving no ultimate satisfaction in itself). Of course many "service uses"—such as the supplying, obtaining, and use of food, drink, and lodging which it is convenient to place in this class because most people "eat to live" rather than "live to eat"—are not exclusively means to other ends but have some immediate end values of their own in direct human satisfactions, and may furnish, as in the case of a picnic party or camping party, the express occasion for people to use the area. In so far, the dependence of their values on enjoyment of scenery is direct, and generally large, for the reasons discussed under (a), because they give greater satisfaction when conducted under appropriately agreeable scenic surroundings and in most cases would not be carried on in this area at all except for its scenic attractiveness. But since in the main the so-called "service uses" are merely contributory to or parasitic on other and primary uses, they are indirectly dependent on scenic values to the same extent as are the primary uses on which they directly depend.

The "service uses" give rise to some of the most perplexing problems of administrative policy in such an area as that of Mount Hood, and especially so in their relations on the one hand to the enjoyment of scenery and on the other hand to questions of charges, revenues, financing, and type of operating agency, problems which can best be discussed in a later section of this report.

3. *Classification of uses of Group B for administrative purposes.*—It is worth noting here that, although the uses of Group B in the Mount Hood area, or any comparable area, can not be intelligently managed and developed without analysis of the motives which impel people to use the area and of the inherent qualities in the area which arouse those motives—attempted in some measure in this report—it is impracticable to attempt, for the practical purpose of discussing administrative problems, any general classification of the extremely varied uses themselves in logical accordance with such analysis. The motives and qualities are too complex and elusive of exact definition for this purpose.

For most practical purposes the uses have to be grouped and discussed in some cases (1) on the land-unit basis, treating together the uses which if properly coordinated can be effectively carried on in a given administrative subdivision of the area having a definite topographic unity, and in some cases (2) on the basis characteristic, physical, instrumentalistic, and requirements in certain kinds of use wherever they occur, for example, automobiles and roads, trails, other specialized forms of transportation, camps, hotels, winter sports, etc.

III. CERTAIN FEATURES OF THE MOUNT HOOD AREA OF NOTABLE IMPORTANCE FOR RECREATION, INSPIRATION, EDUCATION, AND IN RELATED WAYS

Our examination of the Mount Hood area with a view to "the identification and interpretation of its major human values" discovers many features of great importance beyond the more obvious economic values of Group A. Some of these values run most directly to the local citizens, others are of wider significance, even of national concern.

The Mount Hood region, including the central peak, the snow fields, and the region above timber line, together with the forest area from which it arises, constitutes one of the most interesting mountain regions of the United States. While in study of outstanding areas available for national-park purposes the Mount Hood region has not been selected for such use, it is nevertheless a region of unusual qualities which collectively present one of the unusual scenic opportunities of this country.

It happens, incidentally, that in the scenic charm of Oregon there are possibilities quite distinct from those of California or of the region farther to the north. It is possible in Oregon to combine in considerable measure the elements of charm of landscapes of California, of the more distinctly arid regions of the Southwest, and of the aspects of abundant vegetation distinctive of the regions to the north.

Taken as a unit, the Mount Hood region seems to present one of the exceptional opportunities for development of charm and beauty of mountain scenery with the elements so segregated as to permit the possibility of centering interest upon special features and producing effects of unusual importance. The inspirational influence or appeal may be made of enormous significance. The element of beauty may be developed as is rarely possible.

1. First of all, Mount Hood, as seen from a distance is an outstanding and notably beautiful feature of the landscape. It is greatly beloved and admired by those who live in the great region from which it can be seen. It is also greatly admired and enjoyed by strangers from every part of the world who, as vacation tourists or in the course of business, visit the American Northwest.

2. The near views of Mount Hood, particularly those from about timber line, and more especially those from the northern, northeastern, and northwestern shoulders of the mountain, are very striking and beautiful, certainly quite unusual, if not altogether unique.

3. In general, considered as a topographic or geologic feature, Mount Hood expresses the element of magnitude, which insensibly in another form represents power, more than is true in the case of Mount Shasta or Rainier. The more narrowly compressed or acute form of mountain gives relatively strong expression of height and magnitude which comes out with the unusual clearness by reason of the fact that absence of bulk permits a closer approach and a more intimate view of the mountain as a whole. This quality is one which characterizes many of the most beautiful and highly prized mountains of the Alpine region of middle Europe.

The spire or pinnacle aspect of Mount Hood, varying as it does according to its sculpturing, is seen in different views, reproduces on

the sheer faces of the mountain an exceptionally beautiful type of reflection or illumination such as can rarely be seen in the more massive mountains. It should incidentally be an essential part of any study of the region to find the means of bringing out from various viewpoints, far and near and under different aspects of illumination, the exceptional beauties of this mountain. There is extraordinary charm in reflections from the sides of the mountain and in more intimate views from the timber line on the north and west. There are elements of beauty scarcely excelled by any mountain in the world as seen from the valley of the Deschutes on a clear or faintly misty evening.

The contrast of Mount Hood with Rainier is brought out in the interesting difference between the summits of the mountains, in one of which a great bulk at the summit is largely covered with snow and in the other namely, Mount Hood, the peak emerges sharply from the snow fields and glaciers by reason of the abruptness of its slopes.

The intermediate slopes of many volcanic mountains tend to be relatively featureless due to the long stretches of ashy or tufaceous material lying at an angle of repose representing the maximum slope for the type of particle composing such a mass. Mount Hood expresses in some measure this feature. It is, however, masked in considerable part by snow and modified by the erosion effects of ice and running water. Fortunately, the glaciers of Mount Hood present a covering which adds to the beauty of the mountain, although it does not bring out the effect of mass and the beauty of ice characteristic of Rainier.

There is a general character of intimacy about Mount Hood, partly implied in what has already been said, but worthy of separate remark. The whole mountain is approachable, accessible, and friendly in a way and to a degree differentiating it from comparable peaks in the Northwest. This quality, though intangible and elusive of definition is, we believe, characteristic and precious.

4. The glaciers about the upper levels of the mountain are certainly of great interest. While these are not the only glaciers in the Northwestern States, nor the largest, nor the most accessible, they are nevertheless certain to be of great value in connection with any reasonable program of recreation or education which may be undertaken in this region. These glaciers and the glacial valleys below them appear to be especially well adapted to the study of certain physiographic phenomena, such as the relation between past glacial action and present activities. Such factors, together with the purely esthetic qualities of the scenery, make them of notable inspirational and educational value.

5. The timber line region of Mount Hood in its details, disregarding the views toward the peak already referred to, is perhaps less spectacular than that of Rainier, but the alpine meadows, as in Eden Park and Paradise Park, are to be reckoned features of great interest and beauty. Once more these are by no means unique, but they are delightful and important nevertheless. It may be remarked in passing that, due to the character of soil and climate these alpine meadows seem peculiarly incapable of withstanding the wear and tear of indiscriminate use by large numbers of people. This fact will definitely limit either the extent or the manner in which they may be made available

for public enjoyment without involving rapid destruction of their values.

6. The wet meadows, as Hood River Meadows, Horse Thief Meadows, and Elk Meadows, are also of much interest and deserve separate consideration. They may be of great value for the enjoyment of their beauty and because they represent a distinct ecological complex not very frequent in this region.

7. The summit of Mount Hood has been the objective of many an enthusiastic pilgrimage. The exhilaration of the climb thither is enjoyed by some hundreds of persons annually. The view from the summit is said to be thrilling, inspiring, extraordinary. Without having climbed to this summit we have reason to believe that this view is unusual and quite possibly more satisfactory in a large way than the view from any other mountain summit in the Northwest.

8. The forest itself on and around Mount Hood has very important recreational, inspirational, and educational values.

The great mantle of forest thrown around the mountain and the broken region adjoining is in its large aspect a spectacular scenic feature against which the contrasting mountains and many minor scenic features are inevitably projected with greatly heightened effect. In this aspect details of the forest count for little; as seen spreading mile after mile away from the observer there may be little to choose scenically between a primeval forest and one wholly subjected to systematic cuttings and reproduction for perpetual yield. And as regards the more intimate scenic values of the forest, it is a fortunate coincidence that, with a few but important exceptions, the areas which are now, or appear likely to become, of any great value for timber production can be so used without any great impairment of otherwise obtainable scenic and recreational values. By way of exception there are some good stands of timber, in cases which are important and fairly numerous but not involving a great aggregate of stumpage values, where the local qualities of the uncut forest are so valuable for some of the uses of Group B as to justify the exclusion of lumbering which might otherwise be economically sound; for example, at Lost Lake and in various areas along and near the Loop Road, such exceptions the Forest Service is endeavoring intelligently to select and provide for in its preliminary plans for "recreational areas" and "primitive areas." But, also by fortunate coincidence, a large proportion of the areas of notable scenic value that are intimately dependent on the natural forest conditions occur where there is practically no economic inducement for lumbering, as, for example, near the timber line, including some exceptionally beautiful but dwarfish hemlock stands fairly well below timber line.

9. Lost Lake is a landscape feature unique in this territory. It is a wild mountain lake of striking beauty and especilly notable for the inspiring view of Mount Hood exhibited from its shores.

10. The gorge of the Columbia River and the mountains, with their famous waterfalls, which border it, constitutes a scenic feature of much more than local interest. These scenic values have been developed with striking success by the construction of the Columbia Gorge Highway. The importance of these features has already been recognized by the order of the Secretary of Agriculture under date of

December 24, 1915, setting aside the Columbia Gorge Park division of the Mount Hood National Forest. The development of a beautiful and very popular public camp ground within this area at Eagle Creek has justly met with general praise.

11. The Loop Highway, encircling the mountain, offers in most of its immediate borders (with some serious exceptions) and in the more distant views obtainable from it, a delightful scenic circuit for automobilists, besides bringing within their reach by excursions from this route, partly by automobile and partly by other means, the other features of the area. Inasmuch as the enjoyment of the landscape from a moving automobile is at present one of the most popular forms of recreation—and a form of very real value—the Loop Highway, with its 400,000 visitors annually, is plainly delivering a considerable amount of valuable recreation. The Loop Highway, combined with the Columbia Gorge Highway, have emphatically popularized this circumscribed area and possibly justify the local claim for Mount Hood as “the most accessible mountain in the world.”

12. Well outside the immediate vicinity of Mount Hood itself, but within the Mount Hood National Forest, are included several other areas of important recreational and related values. Between Olallie Butte and Mount Jefferson lies a region of glacial lakes, Olallie Lake and some 40 or 50 others, which offer such values, including good fishing. The views from Olallie Butte, High Rock, and other relatively accessible peaks are of notable public value. The mountain hemlock forest on the slopes of Olallie Butte, of little value for timber, is an exceptionally beautiful example of its kind.

13. Numbers of small streams in pleasant sylvan settings, as notably in the vicinity of Rhododendron, are peculiarly enjoyable in an intimate way; and in connection with favorable summer climate and proximity to the other features of the region have led to an active demand for summer-home sites and camping places on and near some of them.

14. Opportunities such as occur in the Mount Hood area for winter sports, such as tobogganing, although not notable in comparison with those commonly found in some other parts of the country, are so exceptional in the Pacific States as to give them considerable local and regional importance.

15. *Beneficial use of features of the kinds above noted.*—There has already been a considerable development and use of the values derivable from many of the features briefly indicated above, although that development has heretofore been rather limited in relation to the potential demand and to a large extent sporadic, casual, and unsystematic. There is opportunity for enormously greater use values of these and related types, and there are great potential demands for such uses and values. These demands arise in large part from the needs and desires of the great and growing population of the region to which the Mount Hood area is conveniently accessible, but in no inconsiderable degree from a traveling public of national and international scope.

16. *Obligation to develop uses adequately.*—An obligation rests upon the Forest Service, as manager of the area, not merely to conserve the natural resources on which these opportunities depend, although that is obviously its first duty, but also actively to ascertain and bring into operation the appropriate means for putting these opportunities

to actual and effective use by the people in such ways as to secure in the highest possible degree the great potential values derivable from them.

IV. GENERAL PROBLEMS, FINANCIAL AND ADMINISTRATIVE, INVOLVED IN THE DEVELOPMENT OF THE ABOVE VALUES

To secure at all adequately in actual use the great values which we believe the natural resources of the Mount Hood area and the potential demand for their use together make possible of attainment will not only require skill in planning and management, but, in the physical processes of development, maintenance, and operation, will require the investment of large amounts of capital. Neither the people of the great region which is most conveniently accessible to Mount Hood nor visitors from a distance can obtain in the long run the great values which the area is capable of rendering to them and which would be worth to them far more than the necessary cost of securing them, unless such large investments are forthcoming.

It is necessary, therefore, to face squarely some very perplexing financial and administrative problems. Congress seems to have no disposition to give financial support on a large scale, at the sole and ultimate expense of national taxpayers, to recreation, as such, in the national forests and to related uses of the types here under consideration. There are strong reasons in support of such an attitude.

In case of the most characteristic product of the national forests, their timber—the actual consumers or direct beneficiaries of which are a minor fraction of the whole population and even of the timber users of the country and are distributed among the population with no approach to uniformity, geographical or otherwise—the basic conception of the national forests requires that those who choose to obtain these goods shall pay a fair price for values received. It is quite inconceivable that Congress would seriously consider a general policy of appropriating large sums from the general tax revenues for the production of timber in the national forests and giving away these products gratis to necessarily limited groups of special beneficiaries. And this is not merely because of hostility to the general communistic ideal of free distribution of goods by governmental edict but specifically because the consumers who could by any possibility be supplied from the national forests are so limited in numbers, and in part so localized, as to make the gross inequity of such a policy evident, even to the communistically inclined, as compared with a method of distribution to willing buyers in return for prices bearing some reasonable relation to producers' costs and to consumers' values.

But the direct beneficiaries of recreational and related uses of the national forests are, and even with the greatest practicable expansion of those valuable uses would remain, similarly limited in numbers in comparison with the total population, and in considerable part geographically limited by the accident of easy accessibility to the forests, which are not, and can not be, located in accordance with the distribution of population or of demand for uses of the kind under consideration. Relatively small net expenditures directly chargeable to recreation and related uses in the national forests, such as can be inconspicuously absorbed into the "general overhead," may "get

by," and be paid for out of the general Federal tax revenues; but large expenditures, such as will be necessary if anything like the full potential value of these uses are to be obtained, can not be financed in perpetuity on that basis without contradicting the very genius of the national forest charter with its implication that the various goods and utilities available from them shall as far as practicable be distributed in accordance with demand at a fair price in the open market.

We believe, therefore, it should be a fundamental principle in the management of the national forests that in so far as practicable the beneficiaries of uses of Group B, as of Group A, should pay the proper costs thereof, and that, subject to the proviso of keeping all charges well within the limit of values rendered for the same—that is to say, avoiding charges in excess of or even very closely approaching the limit of "all the traffic will bear"—more than the bare costs may wisely and properly be charged where practicable, in view of the fact that these cases will be offset in whole or in part by the costs of providing associated values which it is impracticable to make directly self-sustaining.

As before stated, where it is applicable there is one great advantage in a simple commercial basis for supplying such benefits or goods, at an economic price safely in excess of economic cost—take it or leave it. The continued willingness of the beneficiaries to pay such prices is, upon the whole, in the long run and in most cases, the surest gage we have that the real value exceeds the cost.

It is by no means so clear by what practical methods costs are to be determined and just how those who receive the benefits are to be induced to shoulder the burden of paying for them. Certainly no one simple formula will apply to all cases. Many different methods, varying with complex and diverse conditions, will be required.

With most portable physical goods, such as timber or food supplies or gasoline and oil, it is relatively easy to apply this gage. With many of the beneficial goods of Group B, inseparable from the land and from other uses of the land, it is difficult and sometimes impracticable to devise and operate a reasonably equitable system of charges that would not cause so much irritation in collection as to diminish seriously the enjoyment of the benefits for which the charges were made. To take an extreme case, some of those who travel over parts of the Mount Hood loop are almost exclusively concerned with getting quickly from one point to another and obtain so little benefit from the scenery along the route that it is worth practically nothing to them. If the Forest Service maintains portions of that scenery in an extraordinarily beautiful condition at a considerable economic cost—for protection and management, in holding merchantable timber uncut, and otherwise—it does so mainly for the benefit of certain other users of the road who do get a benefit from it which may in the aggregate be worth to them far more than these costs. But it is utterly impossible to collect peep-show charges from those who enjoy the scenery and not from the other travelers for whose benefit no expense but that of the road itself has been incurred.

Even the old system of collecting individual toll charges from all users of a given road, or group of roads, in order to place on them instead of on others the burden of costs incidental to its construction and maintenance—with or without scenic attractions—has proved

so unsatisfactory in practice that it has been generally abandoned, although the method is still regarded as properly applicable to certain bridges, and in modified form appears in the seasonal fee charged for the entry of automobiles into the national parks. In abandoning the toll-road system we first went to the extreme of loading practically the whole burden of public-road costs on the general taxpayers, but a workable substitute for service tolls in the case of State highways has since been discovered in the gasoline tax, which falls mainly upon road users and (roughly) somewhat in proportion to amount of road use. The main advantage of the gasoline tax is not that it more pleasantly accords with our ideas of abstract justice than paying for roads wholly out of a general property tax, nor merely that it plucks a lot of feathers without much squawking, but lies in the facts, first, that it removes most of the strong and well-founded selfish opposition to extensive public-road building from taxpayers who would get little benefit from roads but who would in the absence of such a tax have to stand the gaff, and thus permits very large sums to be spent upon such roads as long as those who mainly get the benefit are willing to keep on paying, and second, that if and when the latter think they are not likely to continue to get their money's worth they are pretty sure to call a halt. In other words, it approximates the advantages of the commercial system of charges.

Another customary device for allocating some of the burden of road costs in special cases on a benefit basis is that of local special assessments, assumed normally by majority assent. A rough parallel to this, in the case of recreational areas in the national forests which are specially beneficial to surrounding localities as compared with other parts of the Nation, would be voluntary contributions from local tax revenues toward the cost of developing and maintaining recreational uses in such a forest. The voluntary assumption by the State of Oregon of a large burden of cost for the Mount Hood Loop within the national forest is a case in point.

The introduction, as a means to social ends, of the valuable mechanism of commercial profit-and-loss accounting carries with it great danger of losing sight of the ends, of making the profit-and-loss motive a bad master instead of a good servant. And it is worth while to discuss here the so-called "service uses" to which it is in general most easily applied. Wherever people habitually resort in considerable numbers to a given place or area for any given purpose or combination of purposes, and especially where the purposes are largely recreational and not very precisely defined in the minds of the people, two conditions arise:

(a) Need develops for some incidental "service uses" without which the people can not satisfactorily fulfill their main purposes in going to the place. Such "service uses" may be exclusively ancillary and contributory to the primary uses, and the business of providing for them may be reckoned as an integral part of the business of providing for the primary uses. On the other hand, the business of providing for these "service uses" may often properly be treated as a quasi-independent undertaking, especially where only a part of the people concerned in the primary uses have need for the "service uses." In the latter case the services are often offered for pay on a commercial basis, sometimes with general satisfaction to the people and in a manner distinctly contributory to the values derived from

the primary uses, sometimes in a manner that greatly reduces those values. Occasionally the latter parasitic condition goes so far as to kill the goose that lays the golden eggs of the commercialized "service uses." Among common urgently needed "service uses" the getting of food and gasoline are typical of those most generally provided for on a commercial basis, either under the same management as that responsible for the conduct of the primary uses or under a management independent or quasi-independent thereof, while the equally essential "service uses" of getting water and getting rid of excreta are typical of those which, because they do not lend themselves readily to self-supporting commercial operation, are more commonly provided for, whether well or ill, out of "overhead" funds derivable in the last analysis from the operating revenues of other "service uses" or of primary uses, whether the latter are conducted on a commercial or on a communistic basis.

(b) Opportunity arises also, because of the mere presence of considerable numbers of people attracted by the primary uses in question, to "sell" to these people various service uses, or pretenses thereof, which have little or no contributory value for the primary purposes that led to the presence of the people. Granted sufficiently high-powered salesmanship, almost anything might be "sold" in such a way and, by the same token, a more or less specious case made out for considering its sale a legitimate incident of the situation. Yet the net effect of such salesmanship may readily be, and often is, grossly injurious to the values of the primary uses. Innumerable illustrations are to be found in "pleasure resorts" of many kinds.

If the initiative in determining what service uses and quasi service uses shall and shall not be provided for, or how they shall be provided for, is left in any considerable measure to individual entrepreneurs, commercial or otherwise, especially if the interests and responsibilities of these entrepreneurs are much segregated and do not include a direct interest in and responsibility for the promotion and conduct of the primary uses, there is almost sure to be an ill-balanced and undesirable development of certain uses, some of them injuriously parasitic, and an underdevelopment of others for which there is urgent need. If the management responsible for the conduct of the primary uses voluntarily adopts a merely defensive and negatively regulatory attitude, or is forced to do so by financial impotence or otherwise, instead of maintaining an active initiative in the development of both primary uses and service uses on lines calculated by it to produce the maximum attainable aggregate values in excess of cost of the kinds which it believes to be best, the initiative inevitably passes into other hands and control of the situation as a whole is lost.

As already made clear, this does not imply that we are opposed to the operation of service uses or related primary uses, recreational or otherwise, on a commercial basis for profit—at prices properly within the limit of the values delivered—or even that we are in general opposed to the performance of such services in the national forests by nongovernmental agencies whose efficiency is subject to the spur of a profit and loss account.

But if the results are to be satisfactory, if the motive of profit making is to be made a good servant instead of a bad master, the

directing initiative must be taken by those responsible for the management of the area as a whole; the kinds, amounts, and qualities of service uses desirable from that general point of view must be foreseen by that management, and then provided for through the use of whatever agency or agencies may seem best adapted for getting the results, whether an exclusive permittee or contractor, competitive permittees or contractors, or salaried employees of the Government.

The very use of such a word as "permittee" or "concessionaire" is suggestive of a wrong attitude in regard to the problem. The management should not be in the passive position of "conceding" privileges or "permitting" activities in response to the initiative of others, like a landowner whose main concern is to peddle out his control over the land to others at any reasonably satisfactory money prices. The common use of such words is significant of a tacit assumption very prevalent in the United States, probably inherited from frontier conditions and the traditional general land policy of the Nation in the past, that the Government as landowner occupies just such a position and that private initiative, based in general on hope of speculation profit, is the normal way to get action on lands owned by the Government and not specifically and exclusively devoted to much more narrowly defined uses than those of the forests.

The fact that there are any national forests was, of course, due to a dawning recognition that a too optimistic reliance on that kind of speculative private initiative was leading to unsatisfactory results from much timberland. It is even more liable to give unsatisfactory results in respect to the potential values of national-forest areas for recreational, inspirational, and educational uses than in respect to timber production. But just in so far as the Forest Service, under the limitations imposed on it by Congress and otherwise, does not on its own initiative get results commensurate with the natural opportunities, this attitude will tend to persist or some other means of getting results will be sought.

Broadly speaking, there are two contrasting ways to finance large expenditures necessary for getting satisfactory results from recreational and related uses on areas situated as are the national forests. Both may be employed in varying degree according to circumstances.

One involves relatively large advances from Government funds in reliance on the management to collect from the special beneficiaries as a whole and in the long run correspondingly large amounts in excess of current operating expense. It is immaterial to this method how far the operation and the collection of operating revenue is conducted through salaried employees of the Government and how far through contractors operating under proper control and direction. But the possibility of getting very far with this method will depend on the confidence of Congress that the managing agency has both the firmly established intention and the ability to put the activities financed in that expectation upon a substantially self-supporting basis with reasonable satisfaction to the public.

The other method involves relatively large advances of capital by operating contractors authorized to collect charges from prospective beneficiaries under conditions which give reasonable expectation both of satisfaction to the public and of proper return to the contractor.

Either method, or any combination of them, depends on the skill of the management in devising, initiating, and putting into effect

coordinated methods of developing the uses in question as a whole so as to secure to the beneficiaries aggregate values which are (1) absolutely large, (2) large in relation to costs, and (3) large in relation to charges collected, and at the same time to secure revenues from the beneficiaries sufficient at least to avoid large unrecoverable drains on the Federal Treasury and if practicable to return a moderate net revenue. Success will depend on avoiding two opposite mistakes. One is a too dominant emphasis on the importance of uses which lend themselves to profitable operation to the neglect or sacrifice of others, involving the constant temptation to encourage or permit parasitic uses actually injurious to total values, and at best tending to secure total values which even though desirably large in relation to the economics cost of securing them are in the aggregate small in proportion to the natural possibilities of the area. The opposite one is an insufficient regard for the fundamental importance of securing net operating revenues from the direct beneficiaries in every practicable way that does not seriously limit the values they can derive from the area. The latter mistake may be no less a limitation than the former on the aggregate values obtainable from such an area simply by undermining the chief foundation for financing a well-rounded development, without which foundation neither the Federal Government nor private contractors will indefinitely supply adequate funds.

V. CERTAIN PENDING OR PROPOSED PROJECTS

1. *Use of lakes.*—Our general conclusions on the subject of the use of the small natural lakes of the Mount Hood area for water storage have been already set forth in Part I of this report. But the case of Lost Lake is worth more detailed discussion.

Lost Lake is one of the strikingly beautiful features of the Mount Hood area. In addition to its intrinsic scenic worth it must be prized the more from the fact that it lies in a region in which lakes are rare. Any plan for making use of the esthetic and recreational values of this territory must place considerable stress on the obvious and incontestable charm of this mountain lake.

One very considerable element of that charm is found in the sylvan wildness of the lake and the sense of remoteness from civilization to the apparently unaltered and uninterrupted natural vegetation around its shores. These shore borders have developed through centuries of ecological adjustment, and if destroyed could be reproduced, if at all, only at the expense of much effort and many years of waiting. If a largely fluctuating level of water were introduced, as would be the case in almost any water-storage development, no such shore line frame could ever be reestablished.

Our estimate of the value of Lost Lake as a landscape feature, available for inspiration, education, and recreation, is so high that we believe it would involve a serious net loss to convert it to other uses—as for water storage—seriously injurious to that value unless and until the values derivable from such economic use become far greater than at present. Inevitably the demand for such industrial uses will strongly increase in the future, but the value of Lost Lake as a landscape and recreation feature will increase at the same time. It is beyond the power of human prophesy to say what will be the balance between these conflicting demands 25, 50, or 100 years from now.

When new conditions arise new comparisons of values may have to be made.

In order still further to preserve the present wild character of the lake and its immediate neighborhood, we would recommend that any proposed leasing of sites for the erection of summer homes for exclusive private occupancy in this area be suspended and that the work plans under dates of May 8, 1921, and April 11, 1928, be amended to withdraw such summer-home sites from present leasing.

It is clearly desirable to provide facilities for camping, under conditions carefully designed to minimize any weakening of the general impression of sylvan wildness and remoteness from civilization, by avoiding in the camping area or areas what is suggestive of the conversion of sylvan camps into a permanent town—even though it might be a very pleasant town—and (2) by keeping the major part of the land around the lake, especially the west side, free even from camps. Some buildings to serve the needs of the general public are inevitable but should be as inconspicuous as possible.

Doubtless various clubs and other organizations will from time to time wish to establish quarters upon the shores of the lake or in its immediate vicinity. In a measure such structure, properly placed and designed and reasonably used, may legitimately be regarded as substitutes for rather than additions to buildings that would otherwise be needed for a wholly unorganized public and as such clearly appropriate to the area, but in general a very cautious policy in regard to such structures seems indicated. The subject constantly to be sought, as has already been pointed out, is to preserve as far as possible the native wild and romantic quality of the lake and of its surroundings as a whole while facilitating the enjoyment of that quality by all the people who value it enough to pay the necessary price of doing without certain things inconsistent therewith.

The presence of a considerable sector of patented land on the north shore of the lake presents a special problem inasmuch as the Forest Service exercises no legal control over developments upon that area. It would seem advisable, however, that the Forest Service exercise whatever influence it may possess, in the way of cooperative agreements or otherwise, to control developments on this patented land with a view to preserving the character of the lake as already discussed. It is to be assumed that those who may undertake these developments will share the general desire for such landscape conservation.

In this connection it seems possible that the private operators on this patented land might provide a series of comfortable and suitable camp houses to be rented to campers at a fair rate, and that these facilities would work out to be a desirable substitute for the privately owned camps previously contemplated on the eastern shore of the lake. The topography at the north end of the lake does not seem especially well suited to the accommodation of such a camp colony, but we judge that careful planning would overcome most of the natural difficulties.

If and when the Lolo Pass Road is built it would seem desirable to establish the northern connection with the present Lost Lake Road at a considerable distance eastward from the lake so as to leave Lost Lake itself on a short spur or loop and route through travel away from its immediate neighborhood.

2. *Lolo Pass Road*.—The proposal to carry through the Lolo Pass Road from a point eastward of Lost Lake to a connection somewhere near the southwest corner of the forest at Zigzag ranger station seems to be practicable and to be desirable at some time in the not distant future, perhaps as soon as arrangements for financing the project can be completed. This link in the road circumscribing Mount Hood will probably find considerable popular use, comparable in a general way with the present Loop Road on the east side of the mountains, though perhaps a little less appealing. There is reason for believing that a few notably effective views of Mount Hood may be developed from this Lolo Pass Road.

In view of the strong probability, amounting almost to certainty, that the road will be used chiefly for sightseeing and recreation travel, it would be eminently desirable that the original location be made in a manner to develop all scenic resources to the fullest. The main objectives of this road, the control points and the preliminary location should be studied thoroughly by a competent landscape architect before the definite engineering surveys and construction plans are undertaken.

3. *Primitive area*.—All recent discussions of plans for the Mount Hood region have contemplated the dedication of a primitive area somewhere on the northern and western slopes, including a zone of varying width above and below timber line. This proposal has our hearty indorsement.

It is not possible with the information now available to speak very positively as to boundaries of this primitive area. Roughly defined, it should undoubtedly reach to and include Eden Park on the north and on the south extend to and include Paradise Park, including also most of the area between these two parks and lying at approximately the same levels, while the easterly boundary of the northern portion should probably be in the vicinity of Eliot Fork. It may be suggested, further, that the lower boundary might follow somewhat roughly the 5,000-foot contour, and on the upper side it is recommended that the area set aside be extended upward into the zone of the glaciers and presumably to the summit of the mountain, thus marking out a fairly complete sector from the summit down to the 5,000-foot level and subtending an angle of approximately 115° on the circumference of the mountain.

The most important recommendation to be made with reference to this matter is that the whole field be examined at some early time in detail in order to fix these boundaries definitely upon the basis of exact knowledge.

This examination should also reveal and record more fully than is now known the whole character and the detailed features of the area. With this more adequate information in hand it should be possible to define more exactly the purposes which this primitive area is to serve. In turn, this information and these definitions would supply the basis for a work plan in which methods of protection, administration, and use would be finally established. These successive steps (a) collection of information as to the characteristics and specific features, (b) definition of objectives, (c) determination of boundaries, and (d) development of administrative methods, are all of great importance.

4. *Certain road questions related to primitive area.*—The portion of the area most closely examined by us was that along the line of the trail from Cloud Cap Inn to Eden Park and as far as the headwaters of Muddy Fork. The qualities observed have already been discussed in Part III. They are of remarkably great interest and value; but, most regrettably, they are enjoyed by comparatively few people. This limited use is due mainly to the fact that they are now accessible only to those who will spend at least several consecutive hours, more or less arduous, hiking or in the saddle, from the end of the nearest road or who camp within the district by packing their equipment in. The recommendation in regard to the boundaries of the "primitive area" is understood as definitely excluding the construction of roads into this district as a means of overcoming such obstacles to its larger use, and this calls for explanation.

As a possible means of making the notable qualities of this district more widely enjoyable, the building of a road or roads would be open to three fundamental objections, entirely apart from high costs of construction. These objections are peculiarly applicable to this locality, but are of general importance as applying in different degrees and ways to many other areas in the national forests suitable for preservation as "primitive."

First, the topography is such that the direct physical changes involved in constructing, maintaining, and operating automobile roads would in general conspicuously and seriously alter and impair the very qualities of the district which make it so well worth visiting.

Second, many of the most important and characteristic of these qualities, on which the special values of the district depend, are such that, unlike the qualities characteristic of many other areas, they can not be enjoyed in any considerable degree from passing automobiles even where wholly unimpaired by road construction; so that the useful function of automobiles in relation to these qualities is practically confined to that of a utilitarian means of getting rapidly to and from certain stations or points of departure for other activities—much like the function of a subway train only more pleasantly performed. Incidentally, the habits we all form in the ordinary use of automobiles make it extraordinarily difficult for most of us to stop at such way stations, get out of our automobiles and take the physically easy but under those conditions mentally difficult steps necessary for securing full enjoyment of what lies just beyond our grasp from the car.

Third, the introduction of roads and automobiles, by facilitating considerable concentrations of people of very diverse habits and motives, at places and in ways controllable by the management, would make it extraordinarily difficult and costly, if not wholly impossible, to prevent serious and progressive damage to some of the most valuable qualities of the area through wear and tear and abuse and through the introduction of sophisticated devices for control of and service to crowds.

In short, the automobile and automobile road as a specialized means of transportation, though admirably adapted to a great variety of conditions, is very ill-adapted to the conditions of a district like this, for reasons no less valid though less obvious than those which make any form of transportation by boats ill adapted for it.

Better means of access than at present for enabling people to enjoy this remarkable primitive area are much to be desired and deserve the most careful and constructive study. But unless and until some new type of transportation is developed which meets the special conditions of the problem much better than any now known, reliance must apparently be placed within the district itself on the primitive device of trails—easier, more numerous, and better arranged for distributing people so as to get maximum enjoyment—and on better means of approach to the borders of the district.

On the latter point two questions deserve special study in relation to fixing the boundaries of the primitive area.

The construction of the proposed Lolo Pass Road will facilitate approach toward this area from new directions, especially along the easy ridge from the northwest, lying between the Hood River and Clackamas River Basins. A branch automobile road could be constructed along this ridge to a point comparatively near Eden Park without involving to any very great degree the first of the three objections described above, and through most of its course along the ridge it would not be subject to the purely negative second objective, since the most notable scenic features of the ridge appear to be broad sweeping distant views which can be comparatively well enjoyed from automobiles. Certainly the general plan should include provision for automobiles to leave the Lolo Pass Road on this ridge and reach a suitable parking place and point of departure into the primitive area. The transition into conditions typical of the proposed primitive area is here so gradual that it is a very perplexing and critical problem to fix the proper location of its boundary and of the terminus of an automobile approach external to it.

Two considerations lead us to believe that this approach should be terminated and the primitive area boundary established far short of the limit to which a road could be extended without involving excessive construction difficulties. First, the topography and vegetation in this neighborhood are such that an automobile road and its inevitable terminal features, if advanced up this ridge anywhere near as close to Eden Park as ease of construction permits, would be extremely conspicuous from much of the typically primitive area; and the sight of them so close at hand would take much of the bloom off that impression of its remote, wild, and primitive character on which so much of the satisfaction in visiting it depends. Second, unless and until far better technical and administrative methods have been developed than any yet employed either by the Forest Service or the National Park Service for handling large crowds in an area like that in the vicinity of Eden Park without rapid deterioration of the qualities which make it attractive, it would be very dangerous to bring a road so close to it as to invite a sudden great increase in the concentration on it by indiscriminate use and abuse especially by those large groups of people whose interest in the peculiar qualities of this area is so slight that they would be deterred from seeing it by a walk well within their powers but who would be drawn to the end of any new road in crowds if only by mere curiosity.

A related problem arises near the timber line on the south side of the mountain. It has been proposed to build a road from the vicinity of Government camp to a building or group of buildings proposed for erection near the timber line, primarily in order to provide readily

accessible facilities for winter sports under better conditions, because of greater altitude, than prevail immediately adjoining the Loop Road. The purpose is in itself laudable, though it seems probable that the cost of construction and maintenance, including snow removal, would be larger in proportion to value for the purpose in view, and the difficulty of recouping that cost from the special beneficiaries much greater than would be the case with a special cableway or other mechanical contrivance for hauling toboggans, passengers, etc., directly up the slope to a suitable height above Government camp while keeping the headquarters and automobile terminal at or near the Loop Road. The point we wish to make here is that in summer the existence of a single good automobile road climbing to timber line from near Government camp and discharging there at a terminal headquarters would involve deplorable results. The soil is a light, dry, loose volcanic ash, bearing a beautiful but extraordinarily sparse and precarious growth of wild flowers, and any considerable concentration of visitors discharging from automobiles at one place along this southern timber line—except when the snow was on the ground—would promptly convert all the vicinity of that place literally into a bare, dusty ash dump. By such a road thousands of visitors would be led exclusively to the one spot along miles of beautiful timber-line country which had been made desolate and disagreeable.

It is clearly desirable to make it easy for more people to get into the timber-line country, but not by means which so concentrate them as to minimize their enjoyment of its peculiar qualities.

5. *Cableway to summit of Mount Hood.*—It is necessary to describe here in detail the installation involved in the proposal before your department for transportation of visitors to the summit of Mount Hood, but for the purposes of references it is convenient to distinguish the four main parts thereof: (1) The suspended cableway, spanning from the summit of the mountain to the rocky crest of Cooper Spur, about a mile to the east and more than half a mile lower, together with the small necessary station structures at the summit and on the spur; (2) the tramway or railroad, operated by cable, on the ridge which slants down curvingly some 2 miles northeasterly from the Cooper Spur crest to just below timber line at Cloud Cap; (3) the hotel and related buildings and utilities at and near Cloud Cap, including the power house in Eliot Branch and its transmission lines; (4) means of access between Cloud Cap and the Cap Loop Road, initially by a widening and improvement of the existing Cooper Spur Road, ultimately, perhaps, by an extension of the cable tramway down to the Loop Road.

VALUES

(a) The chief value to the public of such an installation, obviously, would be the enjoyment by large numbers of people who could not or would not otherwise get to the summit or even much above timber line, of the notable experience involved in a trip to the summit of Mount Hood by the cable route. It is impossible to give a full analysis of the complex elements of interest and pleasure in such an experience, differing widely with different people and under different circumstances, but some of the main points must be set down.

(1) *Enjoyment of the views from the summit.*—These views are, beyond any question, very notable, inspiring, instructive, and generally enjoyable. They are of a type hitherto obtainable only by climbing to one of the very few mountain peaks which, by their dominant height, their abruptness of slope, and their situation, command great panoramic views of mountain and forest scenery comparable with those from Mount Hood. The climbing of such summits is usually so arduous as to be quite beyond the safe physiological endurance of many people who would keenly enjoy such views, and practically deterrent to a still larger number whose interest in the views is not quite sufficient to overcome their laziness. To enable great numbers of people to enjoy such views by the expenditure of a little time and a few dollars, with almost no effort is of real importance; the value of doing so at Mount Hood (or any other mountain) depending on estimates of the demand for and supply of such opportunities. We believe the demand is large, and certainly up to the present the supply has been practically nil in the whole great region from which Mount Hood is reasonably accessible.

It is important, however, to note one new factor of supply: The rapid development of aviation promises to make the experience of panoramic views from a great height, not alone over the types of country which surround Mount Hood and other dominant mountain peaks but over every type and variety of country, a relatively common and easily attainable thing, instead of a rare experience attained only with much difficulty as has been the case in past centuries.

This is not to say that the views from a moving airplane, even flying among and above mountain peaks, will give at all the precise equivalent of the experience obtainable by standing on those peaks themselves. The difference in quality of experience between flying above and among the mountains and being enabled to attain and stand on a peak by a transportation device firmly supported from the ground is considerable, each having elements of value which the other lacks, even though to many of those who would particularly appreciate the special values of views from the peak rather than from a plane the mere circumstance of visiting the peak with a crowd of others by any means of mass transportation, would largely reduce their enjoyment of them.

On the whole, it can hardly be doubted that, as air transportation comes more and more widely into use, the ease and frequency of obtaining inspiring panoramic views from great heights, and from positions chosen at will and endlessly varied, will absorb and satisfy a considerable part of that potential demand for getting such views from the summit of Mount Hood which could otherwise be satisfied only by some such means as the proposed cableway.

In some degree the same is true of the demand for certain other enjoyments which the cableway could furnish and which are referred to below.

How far this factor will diminish the large total values in human enjoyment derivable from the Mount Hood cableway if installed, and how far it will correspondingly diminish its gross earnings in dollars and cents, as compared with what might reasonably be expected if there were to be no competition from air transport—as has been the case with mountain tramways and cableways elsewhere in the past—is a highly speculative question.

Assuming that the Government would assume none of the burden of economic cost involved in such an installation, any judgment as to the speculative chances of financial profit and risks of financial loss primarily concern prospective private investors and not the Government; and the Government need only consider the probable gains and losses in human enjoyment of the area. The values in human enjoyment resulting from the proposed installation would in any case be considerable, even if the development of air transportation and other uncertain factors should make those values much less than at present estimated and result in serious net loss to the speculative investors in the enterprise. The main concern of the Government in the matter, therefore, is merely to make reasonably sure that such incidental net reductions as the proposed installation might cause in other human values derivable from the Mount Hood area would not outweigh the quite positive values it would give to its users over and above the prices they can be induced to pay for their use of it.

An attempt to strike such a balance follows the discussion of other values derivable from the project.

(2) *Views of the peak and its vicinity from the cableway and tramway.*—Judging what these views would be, and how great their value to most users, depends on the exercise of imagination, because we have not actually seen them. We believe, however, that their value would be large and in part unattainable by other means.

The views obtainable from the tramway to the Cooper Spur station toward the peak and the supporting country northward to below timber line, and those on to the surface of Eliot Glacier, would be closely similar to the views otherwise obtainable by walking or riding some or all of the 2 miles up the same bare ridge. The main difference is that they would be seen more easily and by many more people from the tramway, although on the whole under less favorable conditions for their appreciation.

The views of the peak and its supporting slopes to the north, east, and southeast, and the views down the length of Eliot Glacier obtainable from a car suspending in air on the cable between Cooper Spur and the summit, slowly approaching or receding from the mountain, would be different in quality from any otherwise obtainable; and just as views, apart from the emotions, pleasureable and otherwise, due to the mere fact of being so suspended in air, would be highly interesting and in part very inspiring, even though probably less beautiful in the pictorial sense than those obtainable from the timber-line region north of the peak.

(3) *Educational and inspirational values.*—The fact that in the course of a trip to the summit and back carloads of people would be moving slowly along in plain sight of certain natural phenomena pregnant with impressive significance of many kinds, and would not necessarily be subjected to diversion of their attention from the significant qualities of these phenomena, would have an important spontaneous educational and inspiring effect upon a few of them at least, and would present a real opportunity—if persons of the exceptional skill and training necessary for taking advantage of it could be found—for focusing the attention of many people on these things in such a way that they could educate and inspire themselves by their own observation and thought about them. The usual guide's talk

or ordinary information scientific lecture would probably do more harm by distracting the attention of the alert few than it would do good by informing the others.

(4) *A group of miscellaneous satisfactions.*—Among the most widespread impelling motives for taking such a trip, tending to result in more or less considerable satisfactions when it was taken, must be reckoned such things as a vague childish curiosity, a desire for novelty, a desire for “thrills” passively received and leading to nothing, a desire to do a thing that is “being done” by others, and a desire to put one’s self without much effort or trouble in a position to say that one has had an experience which others have thought worth attaining by great effort (in this case climbing Mount Hood on foot). Even though these be regarded as satisfactions of a rather low order, it can hardly be denied that they are in the main harmless, pleasant, and much sought after. Even though their practical equivalents be obtainable in many other ways and places than by taking a cableway trip up Mount Hood, so that no considerable sacrifice of values peculiar to this area would be justified for the sake of obtaining them here, they would still be of large importance here if regarded as salable incidental by-products of a mechanism otherwise desirable for reasons proper to the locality but impracticable without the revenue derived from these by-products.

(b) Another group of values which may legitimately be claimed for the project and which would accrue even to people who did not use the cableway would consist of increased and improved hotel accommodations and related services at and near Cloud Cap and increased and improved means of access to that locality from the Loop Road. These would be important in relation to general enjoyment of the timber-line region from Cloud Cap as a headquarters and point of departure, and specifically in relation to winter sports. These values would be real and considerable, but call for three qualifications:

(1) Space adapted to the satisfactory handling of crowds and pleasant accommodations for them—like hotel, cabin groups, camps, parking space, etc.—is decidedly limited in this vicinity, and although it would be an obvious gain to those not bound for the summit via the cableway that the latter would justify a larger overhead expense in providing accommodations serviceable to them, and would share the burden of that overhead with them, there is some question whether this would not be offset by the extra load on the limited space.

(2) The particular design for a hotel at Cloud Cap submitted by the proponents of the project would, in our opinion, be excessively and unpleasantly conspicuous as a feature of the timber-line landscape for a long distance around, thereby needlessly reducing the value of the region to all its users; and it ought therefore to be radically modified. As drawn it would probably be a more conspicuous, and certainly a more gratuitously conspicuous, contradiction of the wild and unsophisticated character of the scenery than the tramway or the cableway itself.

(3) The necessity of providing, in connection with the cableway and its accessories, for a much-increased peak load of travel between the Loop Road and Cloud Cap involves, in the absence of a tramway between those points, a radical widening and improvement of the present road so as to be safe for heavy 2-way traffic, including large

busses, and presumably the keeping of this road open and safe for travel in winter up to timber line. How the burden of this extra overhead expense would be met and distributed is an important problem. It does not seem to us, in view of the principles discussed in Part IV, that the Government would be justified in subsidizing the project by assuming the burden of this very substantial item of cost.

DRAWBACKS

Some of the objections which have been seriously urged against the project appear to us of little weight, some deserve careful consideration.

(a) There is a group of what may fairly be called sentimental objections, not wholly negligible but of minor permanent weight, partly because of the mutability of sentiment with changing conditions. Typical of these is a conservative hostility to the mere idea of any mass transportation service to the peak because it disturbs familiar associations of the peak with arduous feats of climbing, or with a sense of exclusiveness and "aristocracy" in the enjoyment of attaining its summit, or on a higher and broader plane with the thought—often detached from any idea of personally climbing the peak—of its majestic solitude and aloofness from ordinary human activities and preoccupations. We do not think these sentimental objections to the mere idea that large numbers of ordinary people will resort to the peak or to the idea that they will get there by a means conceived as mechanical, unromantic, or commercialized should be allowed to stand in the way of providing means which would make possible to large numbers of people now excluded from it the enjoyment of the great and inspiring qualities obtainable only on or near the peak. It is only people of weak or undisciplined imagination for whom such ideas would be a permanent hindrance to appreciation of the mountain's finer qualities, even if the latter furnish the excuse for these sentimental objections.

(b) There is a group of objections, less purely sentimental, based on the belief that changed physical conditions at the summit resulting from the cableway would inevitably so influence the state of mind of visitors as to interfere very seriously with their enjoyment of its inspiring values. It is undoubtedly true that an environment of platforms, railings, buildings, etc., adapted for handling even of moderate crowds on a very restricted mountain peak, and the sight of the cableway and its appurtenances in the foreground and middle distance of the easterly views, and an enforced mingling with people, some of whom are sure to seem but little appreciative of great qualities of the situation and chiefly concerned with petty personal affairs, are, even for people wholly free from snobbishness, distracting and unfavorable to the full enjoyment of the values peculiar to the summit of Mount Hood and other than those of the miscellaneous sort referred to under (a) (4) above. On the average a thousand people, of any or all sorts, would get much less value from visiting the peak under such conditions than if they could do so under more favorable conditions. But it must be borne in mind that the more deeply anyone is capable of being impressed by the noble inherent qualities of the views from the peak the stronger is the impulse to avoid or ignore

any petty distractions which can be ignored or avoided, and that the degree to which these distractions and annoyances could be ignored or avoided by those who wish to do so would depend largely on the skill and ingenuity with which that end is sought in the arrangement and management of conditions of the peak in addition to and apart from solving the obvious mechanical necessities.

(c) There is a group of objections founded on the belief that the physical changes introduced by the proposed installation would alter the views toward the mountain in ways seriously injurious to the values otherwise derivable from them.

As to the more distant views of the mountain, we are satisfied that with suitable modifications of the design for the proposed hotel and with proper care as to other details no appreciable or objectionable change would be perceptible to the naked eye, except possibly under unusual conditions of light or of snow distribution the line of the tramway might be recognizable.

As regards nearer views, especially from the vicinity of Cloud Cap and the extraordinarily interesting and beautiful and inspiring timber-line region to the west of it, changes would be distinctly visible, and their effect is a matter of degree and kinds very hard to express. Probably the most conspicuous change, as before indicated, would be the proposed hotel if erected as now designed; but we believe this could be much subdued without loss of values essential to the project. Next most conspicuous, and from many important points of view, would probably be the tramway or railroad to Cooper Spur, and the grading—even though comparatively light—for its roadbed along some 2 miles of wholly bare ridge above timber line. As a rough measure of its conspicuousness it may be noted that the grading for it would involve much less physical change visible from a distance than would an automobile road to the same point—which no one has yet proposed—and that the visible line marked by it would in its location conform much more closely to the dominant topographic lines of the ridge than any possible road line; but that it would nevertheless not only be an unescapably obvious artificial line but clearly recognizable as a railroad. From the important points of view in the timber-line region the actual cables of the span to the summit would be visible only to people of very good eyesight, if at all, but the moving cars suspended from the cables would be clearly visible.

The effect of all this upon the human values otherwise derivable from use of that large part of the timber-line region affected by it is very difficult to estimate.

Considered as mere marks or scratches on the scenic pictures regardless of their having any more significance than accidental marks or scratches on photographs or paintings of the same scenes, what could be seen of the proposed installation above timber line would apparently impair the pictorial compositions very slightly in most cases. But in the actual mountain landscape these particular marks or scratches would have definite significance as insistent visible reminders that in reaching the vicinity of timber line one had not escaped for a time beyond the sophisticated and man-dominated region of everyday life into the borders of an ultimate and essentially untamed alpine wilderness of rock and snow and ice; that, on the contrary, one had been outstripped, and, as it were, hedged in, by that

commonplace of civilization, a railroad and mass-transportation service, reaching past the quasi wilderness to its remotest limit. This involves a loss of value which might be classed as a sentimental one, but it appears to us of a different and much more important order, for those whom it would affect, than the sort of sentimental objections discussed under (a) above.

BALANCING OF HUMAN VALUES OBTAINABLE WITH AND WITHOUT THE CABLEWAY

We are agreed that aside from the drawback last above discussed, relating to the effect of the proposed installation upon views toward the peak obtainable from parts of what we have called the timber-line region, all the other reductions in the human values obtainable from the Mount Hood region which would probably be caused by the proposed installation are not sufficient to outweigh the human values it would probably secure. It becomes necessary to consider that one drawback with special care, especially in view of the fact that we are on this point not wholly unanimous. On certain points we are fully agreed, after the most careful study and making every effort to discount and allow for any personal preferences and prejudices:

First. Contrary to a very common assumption, we believe, as previously indicated, that, on the whole, for those who can obtain access to them, disregarding for the present the relative numbers of such people, the qualities of enjoyment and inspiration to be obtained in the northern timber-line region from views toward the mountain are not merely of immense value but are much more valuable than those obtainable from the panoramic views at the peak itself. This comparison explicitly leaves out of account other quite different types of value, such as are obtainable from the process of climbing the peak on foot or from the group of miscellaneous satisfactions mentioned under "Values (a) (4)" above. Further, it leaves out of account, as noted, the quantitative element of the number of people affected. It is a qualitative statement about what impressed us as the most notable single element in the natural resources of the Mount Hood region. In other words, we believe that for every thousand people visiting the northern timber-line region under reasonably favorable conditions, and for every thousand people visiting the summit under reasonably favorable conditions, the former would on the average derive greater scenic and inspirational values than the latter and be more strongly impelled to repeat the experience again and again for the sake of those values.

Second. These high special values associated with the timber-line region, although primarily dependent on many other factors, such as the topography of the foreground and the form, dimensions, and distance of the peak, are also largely dependent for their full enjoyment upon a pervading sense of escape into a region beyond the last outpost of familiar environments of a sophisticated civilization, a sense which would be strongly contradicted not only, as elsewhere noted, by the visibly close proximity of a busy automobile terminal, but even more so by the visible presence in the view of a railroad reaching on beyond one toward the peak.

Third. The tramway and its accessories would be thus visible from many points in the easterly part of the northern timber-line region,

embracing some, though by no means all, of its more valuable areas, but certainly embracing its most easily accessible areas.

Fourth. As to the number of people potentially concerned, it is obvious on the one hand that if the comparison could be made between the largest number of people it would be physically possible to accommodate on the peak without uncomfortable crowding and the largest number it would be physically possible to accommodate similarly on the highly enjoyable parts of the timber-line region—or even merely on such of them as would be directly impaired in value by sight of the tramway and its accessories if constructed—the latter would be of a prodigiously larger order of magnitude than the former. It is physically impossible to pack into the very limited space on the peak of Mount Hood a number of people remotely approaching the number that could be accommodated with amplitude even in the best selected parts of a circumferential zone at that distance from the peak where are to be found what we believe to be the finest and most inspiring views obtainable anywhere on the mountain, not excluding the peak itself.

On the other hand, it is equally obvious that this is not a fair comparison as to the number who could probably, in actual fact, be accommodated with reasonable satisfaction in the two localities in the near future. It assumes solution of the very difficult administrative, technical, and financial problems of providing means of access to and from the specially valuable parts of the timber-line region sufficiently easy, rapid, and otherwise satisfactory to draw large numbers of people.

It may reasonably be assumed that most people visiting the peak by the cableway would stay only a few minutes and that their places would be filled again by newcomers many times a day, while under any conceivable conditions the length of stay of most visitors to the timber-line region would be measured in hours, sometimes in days. But the area of the timber-line region is so vast that even at a rate of "turnover" many times slower than on the peak its maximum daily capacity, if limited only by lack of space, would still remain far greater than that of the peak and the cableway. The real limitations on the number of people per annum who would actually use the cableway and actually use the timber-line region lie elsewhere.

In the case of the cableway, how far that limit would fall short of the theoretical capacity depends mainly on how many people would want to use it at other hours and on other days than the popular ones, which bring a peak-load traffic fixed by the physical limitations of the plant.

In the case of the timber-line area the number of visitors might continue to be limited, as it is now and as the off-peak use of the cableway would be, by the fact that not as many people would care to go, under the conditions confronting them, as there was room for. The inherent natural attractiveness of the area is so great, however, that we have no hesitation in predicting that increasing the present poor facilities for access would increase the numbers resorting to the area per annum, both from Portland and other neighboring areas and from distant regions, far beyond the number who could and would use the cableway to the summit, if another and very troublesome set of limitations did not come into play.

Any very large increase in the number of visitors to this area involves the solution of very difficult administrative, technical, and financial problems, not merely, or chiefly, those of providing means of access to and from the specially valuable parts of the timber-line region sufficiently easy, rapid, and otherwise satisfactory to draw large numbers of people, but also those of so handling the people that they would get a high degree of satisfaction and would not seriously deteriorate the qualities on which the value of the region depends; and not least those of obtaining revenues—from the beneficiaries or otherwise—adequate to support the large economic cost of doing all this. How these problems can best be solved and for what numbers they can be satisfactorily solved are not yet apparent and can not be determined except by a long course of investigation and cautious experiment, whereas the administrative and technical problems of getting people to and from the peak in numbers closely approaching its physically limited maximum capacity are comparatively simple, and the financial problems involved need not worry the Government nor delay the development if, as is generally believed, private investors stand ready to risk enough private capital to put the project through.

To sum up: We are agreed that an opportunity exists for ultimately developing in a zone surrounding the peak proper, and exclusive of it, public activities which could be enjoyed by larger numbers of people than could and would visit the peak even with the most effective means of access to it, which would give, on the average, greater satisfaction to the users than those obtainable on the peak if made accessible as proposed, and which would do far more than the latter to make Mount Hood justly famous, nationally and internationally. We further agree that whether the proposal to facilitate access to the peak by means of a cableway is or is not undertaken, this other and greater opportunity ought to be developed as fully and perfectly and rapidly as practicable in proper balance with other opportunities, and that the intelligent development of it as perfectly as circumstances may permit is much more important than what decision is reached about the cableway. We are in agreement also in the conclusion, which we all regret, that the values ultimately derivable from such a supremely desirable development would, to an appreciable extent, be diminished by the prior construction of the proposed cableway to the summit. But we are not in complete agreement as to the seriousness of that diminution or as to the weight which ought to be given to certain considerations of policy which depend on factors of a wholly different sort from those hitherto discussed.

Up to the present we have been considering how much good, how much satisfaction, how much benefit of various kinds could be derived by actual users of the area from various uses of the area by them individually, giving due regard to the number of such users as well as to the degree of value obtainable per capita.

The first of the new considerations is that a large proportion of the numerous advocates of the cableway appear to be influenced not so much by their expectation of direct personal enjoyments or satisfactions to be attained from actual use of the cableway by themselves, or by other individuals in whom they are specially interested, as by a belief that the cableway would, indirectly, because of its unique character, be good advertising for the region, would, in a general way,

be "good for business." Whether the department would be justified in making any sacrifice of the net values obtainable directly by users of the area for the sake of such indirect advertising values for the region, and what the latter values would be, are questions reaching somewhat beyond the scope of our inquiry.

Second, the fact that there is a strongly prevailing regional public desire for the installation of the cableway, regardless of the motives of that desire and regardless of whether the expectations on which that desire is founded would or would not be realized by the installation of the cableway, raises a very difficult and perplexing problem of policy for the department in that a friendly spirit of cooperation between the people of the region and the Forest Service is almost essential to any adequate development of the Mount Hood area for public use and enjoyment, and that the continued denial of the now popular demand for a cableway might be locally regarded as a hostile, arbitrary, bureaucratic action seriously embarrassing to the Forest Service in its efforts to build up such cordial cooperation with the public of this region.

When these considerations also are taken into account one member of our committee reaches the conclusion that although the values potentially derivable from other parts of the Mount Hood area, especially from the timber-line region, are higher and more important than any derivable from the cableway installation and would be diminished by the latter, the cableway ought nevertheless to be permitted, chiefly for these reasons: (1) That popular demand is and will be so strong for mechanical transportation to one or more of the several high snow-clad peaks of the Northwest that it is reasonable and perhaps inevitable that one of them should be so used, conserving others for uses with which that use would interfere, on the general principle of specialization of function; (2) that if such specialization is to be made no sufficient argument has been advanced for selecting some other of these peaks rather than Mount Hood for this special use; (3) that even as concerns values derivable from Mount Hood alone, the principle of specialization of areas applies, and there would remain even after the installation of the cableway a large part of the timber-line region in which the other inherently more important values would be obtainable with comparatively little diminution; and (4) finally, the continued refusal to permit the cableway would not improbably cause a popular local reaction against the Forest Service that would delay and might possibly even prevent the proper development and utilization of those very values for the sake of which the installation of the cableway is opposed.

The other two members of the committee recognize the force of these arguments, but can not bring themselves to ignore or to obscure the critical and fundamental importance of the conclusions to which they are driven by the entire investigation; (1) that the prime question before this committee is how the Mount Hood area, as a unit, can be made to give the greatest values in direct human use and enjoyment to the people of the surrounding region and to visitors from a distance how it can be made most worthily famous among the notable recreation areas of the country; (2) that greater direct values from the area and greater fame for it could in the long run be secured without a tram and cableway to the summit than with it; and (3) that if, instead of aiming consistently at the very best results that can possibly be got

out of the area as a whole, a beginning is now made by sacrificing some of those best values for the sake of an immediately popular detail a precedent will have been set up for the gradual frittering away of the extraordinary potentialities of the area.

6. *Vicinity of Government camp and related problems.*—That the village of Government Camp, with its hotels, stores, etc., has developed as the main center of service facilities for those who resort to the Mount Hood area for recreation and kindred uses, is probably due more to the occurrence at that point of a considerable body of patented land available for uncontrolled private development than to any deliberate searching out of the best location for such a center. This general vicinity, however, seems in fact one of the best, and probably the very best, for such a center. It is nearer Mount Hood and higher than any other considerable area of land topographically well adapted for such uses that is traversed by the Mount Hood Loop Road. It is nearer Portland than any other such area near the mountain. It is not far from the junction with the Mount Hood Loop of the road from the south. And the general shape of the land rising toward Mount Hood from this vicinity has two notable advantages; the slopes are easy enough to be inviting, and in general they do not rise so abruptly from the vicinity of the road as to cut off all view of the peak, which is the case nearly everywhere east of the Government Camp summit except on the steep north-facing slope west of Barlow Pass and in crossing the White River Valley.

The views of the peak from the present road at and near Government Camp are less impressive than from the two points last mentioned, because the foreground slope rises directly from the road almost fast enough to cut off the view. Indeed if the burned and cleared land on this foreground slope is permitted to grow up to mature forest, as it is making a valiant effort to do, all views of the peak from the road here would be cut off by the trees. But from other points in the immediate vicinity of Government Camp there are remarkable opportunities for presenting views of the peak in a most impressive manner. These opportunities, no less than the existence of the hotel and other service facilities on private land at the Government Camp village and the favorable topographic conditions for increasing such facilities and others desirable in connection with such a center for recreational uses, seem to make it desirable to accept this vicinity as the main resort center of the Mount Hood area and to plan for gradually making it as complete and perfect a thing of its kind as skill and ingenuity can devise.

Government Camp village as it now stands, taken as a whole, is neither better nor worse than thousands of other popular resorts, more or less shabby, tawdry, crude, and unsatisfactory, which have sprung up in many naturally attractive regions in the United States under the process of free-for-all competitive exploitation of the drawing power of such natural attractions, scenic and otherwise. The characteristics of such resorts are the normal fruit of their dependence on the initiative of unorganized and generally noncooperative individuals operating usually on small capital, aiming primarily at quick money returns, each thinking more in terms of maximum immediate profit from his own little fragment of the whole enterprise than in terms of maximum values in the long run, and on the average—because that is apt to be the background of the people who are most

apt to be drawn into this kind of small speculative enterprise—having much more of enterprise and self-confidence than they have of taste, skill, and knowledge of specialized technique for getting a high quality of results even in the particular part of the business which each tackles. Again and again such resorts have sprung up, flourished for a time, and gone to pot, killing the goose that laid the golden eggs because they were not good enough to hold the patronage of the public more than a little while.

There is no inherent reason in the physical situation, or in the potential public patronage, why there should not be gradually developed in the region embracing Government Camp a really worth-while center of resort so attractive, so satisfactory, and so distinguished that it would rank in quality among similar resorts in America comparably with the rank of Mount Hood among the great mountains of the continent.

That is a high aim. Not the remotest symptoms of an intelligent effort to pursue such an aim are yet evident. Much that has been thus far done points toward a commonplace third-rate development, appealing to the unexacting standards of the less exacting part of the public. But if the people of Portland and the surrounding region, and the Forest Service as trustees of the Nation's interest in this remarkable Mount Hood area, want to rise to the opportunity here presented, want to make the Mount Hood area worthily and nationally famous, no lower and more commonplace aim can rightly be tolerated.

Our brief survey of the situation does not enable us even to sketch in outline a plan of development which could be pursued with confidence of ultimately attaining such an aim. We know that such a plan can be developed by adequate study, and the sort of things which it might include may be suggested by indicating a few of the possibilities which occurred to us as worthy of serious investigation.

Immediately south and southwest of the Government Camp village is a flat swampy valley, partly in private ownership but wholly "unimproved," and partly in Government ownership; south of this again the land rises to a ridge extending west from Multoppor Mountain, the lowest part of the ridge being considerably higher than Government Camp. There appears to be no serious difficulty in the way of (1) bringing all this land, south of the lots fronting on the main street of Government Camp village, under unified public control; (2) creating a lake in this valley as the local landscape focus of the whole development, probably by means of an earth-fill dam with material excavated mainly from the shallow flowage margins of the lake. The value of such a lake in this situation would be much more than the important values which attach to any constant-level lake as the central feature of any mountain resort, and especially so in this region of Oregon, with its opportunity for boating and fishing and the landscape qualities proper to mountain lakes in general. Its special importance would lie in the fact that from its southern and southwestern shores and from the slopes above them the whole sweep of the snow-clad cone of Mount Hood would be seen across a spectacularly perfect foreground of water at a distance scarcely more than half that at which it is seen from the northern shores of Lost Lake.

A loop of the Mount Hood Loop Road would traverse these shores, crossing on the dam at the west and returning through the woods east of the lake, bringing these spectacular views within easy reach by

automobile from the village of Government Camp and at the same time permitting those whose interest was solely in the scenery, who had no shopping or eating or other village business to transact, to avoid the congestion and annoyances of the village by circuiting past it around the lake. The village street and its buildings and utilities would be screened in the various views across the lake toward the mountain by the trees on its northeastern shore just south of the present lots, but there would be direct access from the village through those trees to the lake shore for boating, bathing, and fishing, the facilities for which could and should be provided by agents or contractors under close public control to assure the utmost possible perfection in quality and appropriateness of structures, equipment, and service.

The kinds of service which can be appropriately and conveniently rendered in a village, including those now rendered more or less well in the present village, would be concentrated in the village, more or less expanded if found desirable. But the village can and should be made indefinitely more agreeable and satisfactory in every way than at present. It would be costly, and it is probably unnecessary and inexpedient to bring about consolidated ownership of the village land in order to do this. With a well-devised general plan and policy a reasonable degree of cooperation between the Forest Service, various agencies of the State, and the more enlightened proprietors and tenants could in a few years accomplish wonders. Agencies of the State can wholly control the improvement, maintenance, and planting of the streets, and can exercise a considerable degree not only of deterrents but of constructive control and guidance under the police power, including setbacks and the amount of open space required on lots. But the main reliance ought to be on systematic and unremitting education of landowners and of the visiting public, by force of good planning and example even more than by preaching, to higher and higher standards in all the qualities that make for delight and satisfaction for the users of such a resort.

Direct architectural control of private structures of a positive artistic sort is not feasible under the police power; but much can be done by making really first rate architectural advice, coupled with an understanding of the general plans for the community, available to all; and much can be done by securing mutually protective voluntary agreements. In special cases, as to special properties whose owners will not cooperate, agencies of the State can acquire land or easements under power of eminent domain. All such things are possible if the idea is "sold" of not letting the place drift into a collection of ordinary roadside catch-penny traps, but that instead of that really developing in this neighborhood one of the best mountain resorts of the world, completely worthy of Mount Hood.

Convenient to but distinct from the village proper there can and should be developed, as and when prospective demand justifies, facilities for numerous appropriate types of service that can not most advantageously be concentrated there—the very best of each type of cottages and woodland cabins for rent, really first-class woodland restaurants of differing scales of price, first-class provision for winter sports, and so on, and so on; constantly emphasizing good quality in essentials and not expensive folderol. Nothing is too good for the Mount Hood area or for the American public, and that public

is not unwilling to pay the necessary price for the best of each appropriate kind. The trouble of late years has been that it is easier to make money out of that good-natured public by selling expensive and meretricious folderol at high prices, accompanied by high selling costs, than in selling the best things of their kinds at what they are worth. Under the condition of strong unified control of an area having the natural attractions which the Mount Hood area possesses, the latter basis can be successfully worked if good enough management is applied to it, and it would be far better for the Forest Service and the people of Portland and the surrounding region and their visitors to put things on that high plane than to follow what is undoubtedly the line of least resistance, namely, to permit the offering to the public here of things just good enough to "get by" with that large proportion of the local public that has never had much chance to sample anything better.

CONCLUDING STATEMENT

In a report like this the immediately foregoing discussion, dealing with a problem so definitely limited as that of developing a really worthwhile resort center around the unpromising nucleus of the present village of Government Camp, most readily conveys a suggestion of values obtainable by aiming constantly at the highest possible quality in each kind of thing attempted and in their combined effect. But the principle applies broadly to the treatment of the Mount Hood area as a whole.

The very best is none too good for it. Almost any amount of effort and skill and patience, and even of heart-breaking delays, would be worth while as the price of getting the very best development of it in the long run, instead of letting it drift into a second rate or third rate sort of development as so many areas naturally adapted to recreation do drift under the influence of individualistic profit-making enterprise.

Respectfully submitted.

FREDERICK LAW OLMSTED, *Chairman.*
JOHN C. MERRIAM.
FRANK A. WAUGH.

STUDY OF MOUNT HOOD AREA

BY

UNITED STATES FOREST SERVICE
NORTH PACIFIC REGION

DATA COMPILED FOR THE MOUNT HOOD COMMITTEE
APPOINTED BY THE SECRETARY OF AGRICULTURE

STUDY OF MOUNT HOOD AREA

1. STATUS OF LANDS

Acreage:		
National forest	198,082	
State	110	
County (tax delinquent)	450	
Private	11,730	
Total	210,372	

Of the land listed as "national forest," 33,004 acres are within the Bull Run division, which has been set aside for municipal watershed purposes for the city of Portland, Oreg. None of the area under study, however, is on the actual Bull Run watershed.

A strip of patented land extends along the bank of the Columbia River and the Columbia River Highway. The town of Cascade Locks on the Columbia River Highway is situated within the area comprised in this study.

The Oregon Lumber Co. own 2,720 acres of land in township 1 south, range 8 east, near Lost Lake, and on the West Fork of Hood River.

The rest of the alienated land is in small scattered holdings.

2. ANALYSIS OF BASIC QUALITIES

(a) Forest conditions, distribution in relation to whole area under study. Originally the entire area was forested except for such areas which are naturally barren as the upper slopes of Mount Hood and a few other peaks and an extensive lava flow along Middle Fork of Hood River.

The forest, however, has been severly broken by burns and the forested areas are now in more or less isolated patches or tracts.

The principal bodies of commercially valuable timber lie along the three forks of Hood River. On the upper slopes of the mountain a band of alpine timber occurs in which white bark pine, Alaska cedar, and mountain hemlock are mixed in varying proportions.

Most of the old burns are restocking. The upper watershed of Eagle Creek, however, has been so severely burned that reproduction has not come in.

The principal types of timber recognized by the Forest Service are, besides the alpine type, Douglas fir, western hemlock, western red cedar, and fir type, taking their names from the predominant species in the mixture.

The acreage and percentages of the principal cover types for national forest land only are as follows:

	Acres	Per cent
Virgin timber	90,086	45
Alpine timber	17,425	9.4
Poles, saplings, and second growth	63,579	35
Deforested not restocking	7,900	4
Mountain meadow	1,166	.6
Glacier and barren	12,926	6
Total	198,082	100

(b) Recreational and esthetic values (by F. W. Cleator, recreation examiner):

SCENIC

In the Mount Hood area we have probably every variety of scenery common to a forested mountain country. There are exceptional examples of all types, and, generally speaking, the various scenic features measure very strong quantitatively as well as qualitatively. Some features may be easily found, in fact, are intimately in view from the highways. Others must be sought for on the trails and many are only discovered by the explorers who leave all artificial routes aside.

There are the following major types of scenic features in the Mount Hood area:

1. *High mountain and glaciers*.—This includes alpine meadows at timber line and above, some damp or boggy, varying to dry or even desert types each with its own system of highly colored alpine flowers and plants. These in their brief summer awakening seem to make holiday in their gala attire. One species gives way to another as blooming progresses.

The best known meadow regions are Paradise Park on the westerly slopes, Elk Meadows on the east side, and Eden Park on the north side. Camp Blossom on the south side is heavily visited but not a flower meadow type. Just east of Camp Blossom, however, is probably the best example of desert alpine plants in the region.

We have here the zone of timberline trees that struggle eternally against the elements, the wintry gales, meager soils, short growing season, and keep always a fringe of gaunt, gnarly, scrubby growth, frequently broken down but still alive, a most interesting exhibit and one that helps to make for the spectacular in mountain scenery.

We have hundreds of snow-fed mountain streams that leap down in cascades and falls, pausing here and there to wander through beautiful meadows in almost endless meanderings and oxbows.

We have a sulphur fissure that still emits the fumes of subterranean volcanic activity.

We have rock ridges and gorges, pumice deposits. There is White River Valley, which is almost annually laid waste for half to a mile in width leaving a desert of boulders, gravel, and sand, whose river almost annually rebels at human intervention and demoniacally rips out sections of the highway bridge which crosses it.

The south side of the mountain with sweeping ridges and snow-fields, though spectacular enough, is of gentler mould than the opposite side. On the north side as viewed from Cloud Cap Inn and Eden Park are bold and gigantic faces and features of rock and glacier, a naturally sculptured masterpiece of alpine artistry.

2. *The lowlands*.—Such great tributaries of the Columbia as Hood, White, and Sandy Rivers, as well as scores of other streams, have their sources in this area. We therefore have stream scenery that varies from that involved in the tiniest trickles to one of the most mighty of rivers, the Columbia. Eagle Creek with its many falls, its Punch Bowl, its precipices, its deep gorges, is equipped with a very excellent tourist trail, and is easily the most popular lengthy trail in the area.

There are beautiful falls seen every summer day by large numbers of people, and others just as fine or spectacular that are hardly ever observed so far are they in the background.

3. *The lakes.*—While there are no very large lakes in the area, Lost Lake some 3 miles in perimeter, with Mount Hood in reflection or in the background, offers one of the finest examples of natural scenic beauty that may be found in the United States.

There are a number of smaller lakes such as Whatum, North, Rainy, and Frog, and many ponds and pools that do not pass as lakes. Being close to a great mountain such as Mount Hood, they take on greater scenic and recreation value and assist greatly in the scenic setting of the mountain.

Bull Run Lake is an excellent piece of scenery almost 2 miles in length, but being within the reserved city of Portland watershed it is not accessible to the general public and may only be enjoyed as a distant scenic gem from high points on the mountain.

4. *The timber.*—The timber type of the lower country is such that one might expect some very fine exhibits of timber on the west side. Forest fires have, however, left the west side type in rather poor condition from a scenic standpoint. We do not have here the majestic corridors through a tunnel of giant firs along the Mount Hood Loop such as are found in the Olympics and some other forests.

The best exhibits of roadside timber in the area are perhaps along the road to Lost Lake. Except for severely burned areas near Laurel Hill and east of Salmon River on Mount Hood Loop, there is sufficient forest cover to make a very good scenic setting for the highway. There is one scenic advantage in a large burn, which is that the observer may look outwardly to the distance without obstruction.

INSPIRATIONAL

There is little about Mount Hood and its environs that is not inspirational to the visitor. People are moody. They will be inspired by a scene or activity one day and perhaps unaffected by the same at another time.

Undoubtedly the greatest inspiration is that which comes from a visit to the summit of Mount Hood itself. I think the poorest and most feeble souls, the superbusiness men, the bootleggers, the most hard-boiled characters could not help but be inspired to a degree by a visit to the summit of the mountain. In fact, I believe some nervous troubles could be cured, or perhaps even a hardened criminal be improved in conscience by a visit here. There is something so wonderful about looking down upon an empire of trees and water from such a high perch that one feels a new power and senses the greatness in the planning and structure of the world.

It is quite evident that the inspiration of the view of Mount Hood from the north side has been strongly felt, since a certain point on the continuation of Ghost Ridge, where a wonderful view is opened up at a panoramic point on the Cloud Cap Inn Road, has been named "Inspiration Point." The name is very suitable.

The massive geological formations which are so bald and nobly exhibited above timber line on the mountain must be an inspiration, as is also the splendor and the vivid coloring of the alpine flower gardens. In the many waterfalls we have not only a visible but an

audible effect to inspire the human being with the power and beauty of water in a mountain setting. A sight of Mount Hood across Lost Lake will inspire the average onlooker.

HISTORICAL

Mount Hood.—On October 29, 1792, Lieut. William Robert Broughton, of Vancouver's command, discovered Mount Hood from a point in the Columbia River somewhere near the mouth of the Willamette. It is fully and well described in Vancouver's Voyage of Discovery. Mr. Broughton honored it with the name of Hood, taken from that of Lord Hood, a British Navy rear admiral who entered the service as captain's servant in 1741. Besides serving in other parts of the globe under the English flag, rear Admiral Samuel Hood served a great deal in American waters and took part under the British flag in nearly all the stirring engagements that marked the close of the war for independence.

The first historical ascent of Mount Hood was in August, 1854. Gen. Joel Palmer, of the American Army, is said to have been a member of the first party to make the complete ascent.

The Mazamas, a noted mountain climbing club with headquarters in Portland, who make somewhat of a shrine out of Mount Hood, were organized on the summit of the mountain on July 19, 1894, and have carried on with strengthening influence and interest ever since.

Lewis and Clark on their famous expedition first saw Mount Hood on October 18, 1805, and described it, calling it the "Falls Mountain or Twin Mountain," but also admitting it to be the Mount Hood of Vancouver.

The fur traders and pioneers, as a matter of fact, did not go in for mountaineering, being occupied with matters of more importance to them, so that early day journals and diaries in general barely refer to the mountain.

David Douglas, the famous botanist whose name is given to the greatest commercial lumber tree of the Pacific Northwest (Douglas fir), is said to have attempted to climb Mount Hood in 1833. At any rate he botanized for a few years very thoroughly about the Mount Hood locality.

Other names of features about the mountain, such as Hood River, Hood River Meadows, etc., are of course derived from the name of the mountain, although Hood River was originally known as Dog River.

From Oregon Trail to Mount Hood Loop Highway.—That part of the famous old Oregon Trail which led to Oregon from St. Louis and the east in the very earliest pioneer days went through the Mount Hood area, in fact, traversed the first mountain pass south of Mount Hood. A monument to this trail has been set up in the vicinity of Rhododendron, Oreg. Old cuttings and camps are still in evidence where the white man has not encroached too heavily. Many wagon tires of pioneer construction, also hubs, spokes, etc., of eastern hardwood have been found and added to collections of State and other organizations and private parties.

This trail and its successor, the Barlow Road, was used by practically all of the early pioneering expeditions with their ox teams to the Willamette Valley. The Columbia itself was, of course, put to consider-

able use by those who preferred the hazards of rafting from The Dalles to the mouth of the Willamette instead of the tiresome trip represented in the contortions of the Oregon Trail in its traverse of Laurel Hill and adjoining rugged topography.

In 1845 Samuel Kimbrough Barlow, a pioneer, received authority from Congress to reconstruct the Oregon Trail into a toll road and finished the first made road in the present State of Oregon in the next year 1846. This road, while it was a rough mountain road, was a great improvement over the Oregon Trail, where in some places the wagons had to be dropped down over steep pitches with ropes. Horse-drawn vehicles and saddle-horse outfits came to favor finally on this road, superseding the old ox teams of the earlier periods.

Two tablets, one in memory of Mr. Barlow and the other of his wife, Susannah Lee Barlow, known as the "real Madonna of the Barlow Trail," were dedicated to this couple on July 27, 1925, located on the site of the Mount Hood Loop, just east of Government Camp, at a point which was formerly occupied by the Barlow Road.

As other wagon roads, steamboat lines, and railroads supplanted the old Barlow Road it fell somewhat into disuse and became ill kept, although it served until recent years as a means of ingress to the south side of Mount Hood for huckleberry pickers, fishermen, hunters, mountain hikers, and summer-home seekers.

Some 20 years ago, or about the time the influence of automobiles began to be felt, a philanthropic individual by the name of Henry Wemme acquired the toll road interests with the intention of improving it as a real tourist road to be presented to the public. Work was started and the tolls system canceled.

Gradually through various influences there grew a better road, though far from perfect, which let in many more recreationists. As the interest crystallized in this direction the final result was the Mount Hood Loop Highway, which now opens up a scenic and spectacular route about the mountain. Except for betterment along engineering lines, it opens up the same territory as did the old Oregon Trail and its successor, the Barlow Road.

There is now alongside the Mount Hood Loop and in a part of what was one of the old road camps of the old trail on the East Fork of Salmon River a white cross in memory of the burial place of a pioneer woman, of whom little more seems to be known.

There has been considerable talk of renewing as a trail or footpath the old Oregon Trail in such portions as are not now obliterated by the new road or other features. This would be of much future interest and significance, and should be done within the rather near future. Otherwise nature will have obliterated it within a few more decades.

Government Camp.—This well-known spot on the Mount Hood Loop Highway and formerly a camp on the old Barlow Road received its name from the fact that in the fall of 1849 an overland trip of the First United States Rifles resulted in the abandonment of a large number of wagons in this vicinity while a detachment was traveling from The Dalles to Oregon City. It has since gradually attained prominence as the winter playground of Portland and vicinity. The Indians have long used and still use the country in this vicinity for huckleberry picking.

Bridge of the Gods.—Indian legends credit a certain location near Cascade Locks on the Columbia River with having been a natural bridge across that river. A book with this name exists. At the point mentioned are a series of rocky islets with cascades and dalles in the river. Geologically it is very probable that in earlier ages there was a mountain range at this point connecting the Oregon and Washington Cascades Ranges, withholding to eastward the vast Cordilleran Lake. There has recently been constructed at this point a bridge across the Columbia River known as the Bridge of the Gods.

Columbia Highway.—This world renowned highway traversing the south bank of the Columbia River passes through the north edge of the Mount Hood area. Its name and fame are of rather recent vintage, since it is the realization of a dream hardly a quarter century in age. It has of course caused a wonderful transformation of tourist traffic and is responsible for immense numbers of visitors to the northerly part of the area.

Lost Lake.—The Indian name for this lake has never been discovered. The lake was originally known as Blue Lake. Acting on information of previous explorers, a party of 12 people headed by E. L. Smith, of Hood River, organized in 1880 to hunt it up. They succeeded in finding the lake and christened it "Lost Lake."

WILD LIFE

The typical wild life of the Oregon Cascades is present in the Mount Hood area. This means black-tail deer, black and brown bear, grouse, and pheasant, fur-bearing animals, such as lynx, bobcat, coyotes, mink, martin, fisher, beaver, etc. The cougar doubtless is present, at least occasionally.

Marmots, rabbits, and rodents, including pine squirrels and chipmunks, and plentiful and often observed as they usually are in high mountain areas. Porcupines are frequently seen, the workings of beaver are very common; but otherwise the animal life is not so commonly seen perhaps as in other regions.

Elk, wild goats, mountain sheep, and perhaps some others which are characteristic of certain regions in the Pacific Northwest are not present in the Mount Hood area.

Bird life is described below under 3 (*d*).

Trout are present in all sizable lakes and streams.

It should be admitted that hunting and fishing are not exceptionally noted as sports in the Mount Hood area, probably on account of heavy human usage.

There is a movement at present on foot to create a State game refuge out of the area that the deer and bear particularly may increase and become more tame as a tourist attraction.

RECREATION

Camping and picnicking facilities in the Mount Hood area are very excellent. Very little restraint is placed on visitors. The great effort and most of the financial Government assistance goes into sanitation and fire proofing improvements such as toilets, garbage disposal, camp stoves, fireplaces, and camp clearing. Water development, camp tables, chairs, etc., are refinements that are not

used very much, although one camp, Eagle Creek, has this very highly developed equipment for special reasons of a public relations nature. As traffic congests it may be necessary more and more to install pure running-water system.

At present the average person may find any kind of camping or picnicking—lake, stream, or meadow style, with auto, pack horse, or hiking equipment—that he may desire.

The Mount Hood area is a hiker's paradise. It doubtless receives heavier hiking use than any other recreation area in the national forests of region 6. Outdoor organizations such as Mazamas and Trails Club, together with such organizations as Boy Scouts, Camp Fire Girls, Y. M. C. A., make very heavy use of the hiking facilities.

The south side of Mount Hood between the Mount Hood Loop and timber line receives a very heavy pedestrian visitation both summer and winter. The Eagle Creek Trail for a long hike and Larch Mountain Trail for a short hike are exceedingly popular. Visitors to Larch Mountain frequently stay overnight to observe sunset and sunrise on Mount Hood. Mount Hood is itself climbed by about 2,000 per annum, most of whom approach from the south side, the remainder from the north side. The fire look-out cabin on the summit is of great interest and a means of considerable comfort to climbers.

Hiking, whether it be over the woodland trails under giant firs and cedars, along streams by waterfalls, skirting mountain lakes, or on the highland meadows, over the glaciers into the timber-line country without trails, or even the little footpaths down in the more civilized country, seems to be a sport or a recreation of huge enjoyment to many people in this region. It is a most healthful and much needed diversion in these times of high-pressure existence.

Horseback riding is of little consequence as yet in the Mount Hood region. A few riding horses are kept near Rhododendron and ridden locally by the younger generation. A pack horse and saddle horse guide equipment is kept near Government Camp south of Mount Hood. However, the horse riding, packing and guiding industry is only in its very infancy in this region, as it affects tourist and recreation traffic. There is great opportunity for use of horses here.

There is little if any canoeing done as yet in the area. Opportunities for the sport are good, however, at Lost Lake, where also the kindred pastimes of boating and bathing will in time take on a large importance.

Frog Lake will in time doubtless be used to some extent for canoeing. It will also be a favorite place for kiddies' water sports.

The other and smaller lakes will probably be little used by water craft of any kind, a few rough rafts probably sufficing.

Fishing is not exceptionally good in the area but is practiced quite extensively by the boys. Good catches are made occasionally in the less traveled streams away from roads.

Zigzag and Hood Rivers are quite heavily loaded with glacial silt, which is discouraging to trout, although not entirely destructive to fishing.

Hunting is not a very popular sport in the area, not only because of the shortage and cunning of the live targets but because much of the area is so heavily used by humans as to require prohibition of shooting.

Summer homes in this area are very popular, particularly in the

Zigzag River watershed, where large colonies have gradually grown up. Several clubs also have acquired permits for Government lands. Lost Lake is about ready for a large summer-home development.

Municipal or other health camps for the poorer classes have not yet been established in the area, although lands for the proposed use have been reserved. It appears that the city of Portland, which should be mainly interested, has about all it can tend to with its park system. Also there seems to be few residents of Portland who are not able to betake themselves to pleasant woodsy surroundings near home or farther away.

Skiing and tobogganing of late years in the Government Camp region have taken on great importance both for the expert and the most lowly amateur. Skiing particularly is a sport that is being made a specialty. Frequent contests are being promoted. Several ski courses have been developed. The location is somewhat unsatisfactory by reason of the frequent warm winter days, which cause sticky snow. Development of chalet, etc., near timber line will increase the snow sports and insure a much more favorable climate.

(d) Educational and scientific values, geological: In an article in the National Geographic Magazine of July, 1908, Mr. A. H. Sylvester, then of the United States Geological Survey, and now forest supervisor of the Wenatchee National Forest, under the heading, "Is Our Noblest Volcano Awakening to New Life?" stated:

The early immigrant to Oregon, while yet on the eastern sagebrush plains, if the day was clear, saw a great white mountain, like a specter, beckoning him ever westward. The sailors of an English exploring ship beheld, day after day, from the Pacific Ocean, the same great mountain, standing white and alone, high above the forest-clad hills that stretched to north and south. They gave to it the name of an admiral of their navy, and never has a man's memory been perpetuated by grander and more beautiful monument.

The Indians of Oregon venerated the great mountain and worshipped the spirit that dwelt therein. The immigrants soon gave to it a love as strong as the native's veneration, and justly, for over everyone who comes within its dominion it casts the spell of its enchantment.

Having seen Mount Hood at various distances and from various directions, for 12 years, and having come under its spell, it was with pleasure that I received my orders from the United States Geological Survey, in the spring of 1907, to begin the mapping of the Mount Hood special quadrangle.

The latitude of the mountain is $45^{\circ} 22' 26.74''$; its longitude, $121^{\circ} 41' 42''$. 81 west of Greenwich. It lies on the crest of the Cascade Range, about 20 miles south of the Columbia River and 50 miles east of the city of Portland. It is the highest point in the State of Oregon, rising to a height of 11,225 feet. This elevation was determined by Col. R. S. Williamson, United States Army Engineers, at an early date, and was checked by me last summer.

Timber grows on and about the mountain up to an elevation of 6,500 feet. The highest trees are stunted hemlock and dwarf pines, which venture out from the denser forest along the straggling lines of the old moraines.

The waters of Mount Hood reach the Columbia mainly through the Hood and Sandy Rivers and their tributaries. Hood River drains the northern and eastern sides; the Sandy, the southern, and western. White River, which receives the drainage from one glacier on the south side, is a tributary of the Deschutes, which reaches the Columbia above The Dalles. At low water the flow of these streams, according to the measurements of the Hydrographic Branch of the survey, amounts to about 750 second-feet—enough water to cover in a year the District of Columbia about 160 feet deep.

AN ALMOST PERFECT VOLCANIC CONE

Mount Hood is one of the great volcanic cones built upon the Cascade peneplain in Miocene times. It is the fourth in height of the snow peaks of the Pacific Northwest, being surpassed only by Rainier, Shasta, and Adams. The peneplain-

like plateau upon which it stands is now well dissected, but the numerous remnants show a fairly uniform elevation of from 4,000 to 4,500 feet. The mountain rises, therefore, about 7,000 feet above the surrounding country. It was probably never much higher than at present.

Though showing many of the features of the volcanic cones of the region, it has enough peculiar to itself to give it a marked individuality. With the exceptions of St. Helens, in Washington, and Pitt, in southern Oregon, its cone is more nearly perfect than the others. It appears to have been built up entirely of andesitic lavas, which were ejected from a single summit crater. Unlike Adams, it has no subsiding craters or smaller blowholes on it or about its base—at least none of recent age. Barrett Spur, Langille Crag, or Coopers Spur may have been such craters; but if so, they are very old and have weathered to such a degree that they no longer have a craterlike appearance.

The volcano apparently became extinct before reaching the stage of the ejection of the more basic basalts which Shasta and Adams poured out in comparatively recent times. In this connection, however, it might be well to state that there is, some 10 miles to the northeast, a large lava flow, probably from fissure, that from a distance appears recent. It was not visited, but could be seen fairly well with field glasses, and at the distance resembled lava flows that lie on the north and south sides of Mount Adams and could probably be correlated in time with them. Neither timber nor grass has as yet begun to grow upon it.

The rock of which the mountain is built is greatly seamed and fissured. Water penetrates it easily, therefore, and, freezing, shatters great masses. On the lower slopes one sees all stages of such disintegration. There are boulders as large as a house shivered into a thousand pieces by frost. Some of them retain their original shapes, others are falling down, and yet others are but a pile of earth.

GOUGING BY GLACIERS

In the work of tearing down the mountain, ice has indeed played the star part. While the freezing of water into the joints has fractured the rock, the glaciers have done the greater work in not only carrying away the debris that falls from the cliffs, but in gouging out canyons and cutting back into the bowels of the mountain itself. The amount of cutting going on at present is not inconsiderable, and from it one gets an idea of what it must have been during the periods of infinitely greater glaciation.

The wide U-shaped valleys of the Sandy and the Zigzag Rivers are plainly glacier sculptured. The intense forestation has covered up and the heavy rainfall has washed away much of the evidence, but in the valley floors one sees many large angular boulders which appear to be of drift origin. These were found as far down the Sandy Valley as the right-angle bend below Cherryville, where the river enters a canyon. On the bench north of the junction of the Zigzag and Sandy Rivers, called Crutchers Mountain, the bedrock is deeply scored.

The drift in the Sandy Valley above the forks is much fresher in appearance and more clearly glacial than that below. The wagon road up the Zigzag above the Tollgate runs over what is clearly morainal material all the way to Government Camp and beyond. On its way it climbs Laurel Hill, a ridge of old granite rock which shows striae and polish. Along the top of the ridge north of the Sandy River, between Hood and Last Chance Mountains, stretches the remnants of an old moraine.

In the park area between the White River and the East Fork of Hood River the rocks that are exposed are very hard, and here again were seen beautiful striae and grooves.

How far this glaciation extended I do not know. I found no trace of it west of Cherryville, but at that place begin to appear what I take to be the terraces of the Willamette Sea of Pleistocene times, and the plot becomes too complicated for the novice.

Permit me to call attention, however, to the great cirques at the heads of the various branches of the Bull Run River and their comparatively low elevation. A closer study of the map reveals lesser cirques in many places. The ice undoubtedly swept through the low passes in the main divide at the head of Clear Fork and Bull Run Lake; also through Lost Lake down the Lake Branch.

These two lakes themselves offer much of interest to the geologist. The former was made possible by a fissure flow of lava in the bottom of the canyon, where now is the lower end of the lake, forming a dam behind which the water collected. This lava is unglaciated and is therefore more recent than the great glacier that

carved out the canyon. The lake outlets through the lava, not over it. The lake level varies during the year as much as 10 feet.

A DROWNED FOREST

Lost Lake, on the contrary, does not vary over a foot at most. It has a fair-sized outlet into Lake Branch. One sees, when navigating it, tree-tops far below its surface. In other words, here is a forest that has been drowned. Lost Lake Butte is an extinct volcano. A flow of lava from it has probably dammed the lake's outlet to the east, causing the basin thus made to fill and overflow to the north. Lost Lake when discovered contained trout, though it is now impossible for fish to come up Lake Branch into it because of falls. Bull Run Lake has no fish naturally, but white fish have been introduced. The isolated ridge north of Lost Lake is largely made up of a cinder deposit in which volcanic bombs of various sizes occur.

ENORMOUS MASSES OF DÉBRIS

But, to return to our mountain, one of its most prominent features is the fan-like outwash on the southwest side. By glancing at the map you will see that this radiates from the gap in the crater's rim and probably bears a distinct relation to it. This whole side of the mountain, reaching from the ridge east of the White River Canyon to that between the forks of the Sandy River, is deeply covered with glacial débris. The small canyons at the foot of the White River glacier are trenched in this débris which once filled the old canyon completely. The Little and Big Zigzag Canyons are cut in it. The Little Zigzag has not reached bottom; the Big Zigzag at its upper forks is in about 30 feet of basalt, but a little farther down stream it is still trenching in the drift. The South Fork of the Sandy and Slide Creek are beginning the herculean task of cutting away the drift that nearly fills the old canyon that lay between Slide Mountain and Paradise Park on the south and Yocum Ridge on the north.

To account for this enormous mass of débris, there is this possible explanation: The forces that built the mountain left it with a well-developed summit crater about one-half mile in diameter and 500 to 700 feet deep, with the lip at the southwest side somewhat lower and probably of less resistant rock than that on the north side. When the age of ice came on this crater became filled with snow and the mountain was covered with an ice cap such as we now see on Rainier and Adams. Glaciers formed on the sides and gradually worked back until the whole southern rim of the crater was cut away and the materials that made it were spread out on the lower slopes and filled the canyons that had previously been trenched. The glaciers then extended back to the inside of the north rim as they still do. They cut away the floor of the crater, but the harder rock of the old neck resisted and divided them and survives as Crater Rock.

The other sides of the mountain have also been trenched more or less deeply, and much débris is spread out below, but nowhere in such quantities as on the southwest.

ABUNDANT FOSSIL ICE STILL FOUND

Let us now examine the White River Canyon more in detail. Unfortunately the map has not been extended enough to the south to shed light on the nature of this canyon below its immediate relation to the mountain. There seems, however, but little question that when the ice filled the Zigzag and Sandy Valleys a similar glacier extended many miles down the White River. The glacier was deeply covered with débris from the ruined crater. So thick was this débris and so well protected by it was the ice that to this day some of the ice of the ancient glacier remains. In the section exposed by the outing of the new streams fossil ice to the depth of 10 to 15 feet may be seen at the bottom of the small ridge which Reid has called Moraine Mesa. The section of Moraine Mesa exposed is shown in the accompanying sketch.

The bottom layer is the fossil ice. This is covered with from 75 to 150 feet of morainal material. Above this is about 3 feet of black soil, or forest humus, on which rests or is rooted a confused mass of tangled logs, with an occasional stump standing erect. Some of these logs are above 2 feet in diameter. They are still wood in a good state of preservation, being neither carbonized nor silicified. The top layer is drift again of the same character as the lower layer and is from 10 to 75 feet thick. It indicates, of course, a return of frigid weather conditions and a readvance of the ice after a temperature-climate period long enough, at least, to allow for the growth of the overthrown and buried forest.

This second drift sheet extends only from the forks of the smaller canyons at the head of the present valley back to the end of the existing glacier or possibly beneath it. It is too recent for vegetation to have made headway upon it. One or two small pines and a few grasses and bipines are all that it has. A few buried logs were observed on the west side of the mountain, near the end of one of the prongs of the Zigzag Glacier, which indicates a probably similar readvance of the ice on that side.

It is scarcely necessary to speak here of the glaciers as these are to-day. The map speaks for itself in regard to them. The survey last year, for the first time in its history, adopted the method of contouring the glaciers, the contour lines on them to be shown in light blue. There are eight ice fields on the mountain which have been recognized as glaciers and given names.

I have mapped, in addition to these, four smaller fields as glaciers, of which the one between the Ladd and the Sandy is the largest and most interesting. The Sandy reaches the lowest elevation, about 5,700 feet, while the Eliot is the longest, about an even 2 miles from bergschrund to nose.

The three glaciers on the north side of the mountain present a most glorious picture as they cascade down from near the summit in great broken masses. After separating, below their common gathering ground, they assume the character of true Alpine glaciers. The Newton Clarke, on the east side, though of great beauty, partakes more of the character of a cliff glacier. With the exception of the Zigzag, which is comparatively smooth, they are all very greatly crevassed and travel over them is difficult. On the whole, they are all probably receding, but owing to several recent hard winters, they now appear to be advancing a little, except in the case of the Zigzag and the White River where another condition intervenes, the volcano's heat.

IS THE ANCIENT VOLCANO AWAKENING?

The volcano has not been in eruption for untold centuries, except as the fissure flow that dams Bull Run Lake and the one that made the lava beds to the northeast be regarded as related to it. Since the mountain was first visited, however, there has been steam escaping from various places on it, but mostly from Crater Rock, together with gas, generally hydrogen sulphide.

Professor Russell, in his book on American Volcanoes, gives a picture taken in 1882 of a so-called fumarole on the south slope of Mount Hood, which was, as near as I can determine, just east of Crater Rock. This picture shows a well-shaped depression in the glacier from which steam was probably escaping. This fumarole apparently became inactive, or later visitors did not mention it.

In the last three years, however, the sleeping volcano has been warming up and stirring in its sleep. Last summer the old fumarole had so developed that the White River Glacier is now cut in two at this point and its bed between Crater Rock and Steel Cliff, for 150 feet along its course, is exposed. Steam and noxious gases are escaping from fissures in the rock thus laid bare.

On Crater Rock steam escapes from numerous fissures and many places are too hot to hold the hand upon, but the most active place is on the north side of the rock, in a depression which is commonly called the crater. Here a considerable area formerly covered by the Zigzag Glacier has been laid bare.

On the 28th of August, 1907, my main camp was at Government Camp, 5 miles from the summit of Hood. For several days previous to this I had been with a side camp on the east side of the mountain. From there, during that time, it was noticed that Steel Cliff, the high east wing of the crater, was steaming more than usual. We had been having rainy and foggy weather, with the mountain much of the time hidden from view, but the 28th was bright and clear. My cook, William Hinshaw, of Portland, and teamster, O. G. McIntyre, of Salmon Oreg., were in the main camp. They are men in whose word and common sense I believe reliance may be placed.

They saw a column of smoke, probably dense steam, rising from Crater Rock, high above the skyline of the summit of the mountain. This persisted throughout the day.

There were probably as many as a dozen other people at Government Camp who also saw the smoke. An unsuccessful attempt was made to photograph it. My own view of that side of the mountain was effectually cut off by Steel Cliff. In the afternoon McIntyre came around to me. He says that when crossing the White River Valley he could look directly up the canyon in behind Crater Rock, and the smoke appeared much plainer than it had from Government Camp. The stream, White River, as he crossed it that day, was at its usual stage.

MORE EVIDENCE OF VOLCANIC ACTIVITY

That night Hinshaw, from the main camp, saw with field glasses a glow from behind Crater Rock, which he described as looking like a chimney burning out.

I returned the next day, the 29th, to Government Camp, crossing on the way the White River, which had swollen overnight to an angry stream of treble its volume of the day before. The weather was cold, and though a drizzling rain had begun to fall in the early morning, there was no warrant for the rise in the stream except the volcanic heat melting the glacier which is its source. Clouds obscured the mountain for a week following the 28th.

I moved camp on the 30th out of sight of the crater, and during the month that remained of the field season saw no further signs of activity.

Mr. S. N. Stoner, formerly of the survey, on about the 12th of November, which was a very clear day, saw from Portland what he took to be smoke rising from Hood. I have heard of no further disturbance, and his observation at the distance of 50 miles is of course of questionable value.

It is interesting to note that this activity of the old volcano was occurring at the same time that daily changes were being observed in the Bogaslof group of volcanic islands off the Alaskan coast.

Whether the phenomena observed last August presage an awakening of the old volcano to new life, or whether they were but a dying gasp, which over, the giant will relapse into a yet deeper and perhaps final sleep, time alone can determine. They do show, however, as Mr. J. S. Diller has pointed out, that volcanoes like Pelee or Vesuvius, which are intermittently active, continue to feel throes of life at long intervals, but weaker and weaker with the passing of time, long after they are destructively active.

But for the present Mount Hood must be taken from the list of extinct volcanoes and placed at least among the doubtful.

(c) Biological, plant (by Ira N. Galbrielson, United States Biological Survey): The Mount Hood area from a strictly botanical standpoint does not differ greatly from similar adjacent peaks, although the light pumice soils on the mountain's upper slopes are undoubtedly responsible for some of the curious dwarfed forms which ordinarily grow more robust at similar altitudes in better soils. From a sightseer's and flower lover's standpoint, however, there are several outstanding areas on the mountain and it is proposed to outline concisely these areas, together with the species of plants which contribute the major part of the color picture which they present during the summer.

The lower flanks of the mountain are more or less covered with a heavy forest of fir and spruce and contain plants sometimes in amazing numbers, common to the surrounding cascades above which it rises. From a spectacular standpoint in this wooded area about the mountain, the rhododendrons and squaw grass are the most important. The squaw grass (*Xerophyllum tenax*) is everywhere, even in the heaviest timber, although the real beauty is most in evidence in the open glades where literally tens of thousands of its towering spires may be seen during its blossoming period.

The rhododendron (*Rhododendron californicum*) through which the Mount Hood Loop Road passes up the Zigzag Creek Canyon is the most accessible and certainly the most spectacular flowering display on the mountain. During the rhododendron season this country for miles is ablaze with the pink blossoms of this shrub.

Among the other plants which contribute to the display of flowers along the lower slopes of the mountain, the little Oregon anemone (*Anemone oregana*) stands out. In the wooded canyons which are found everywhere about the mountain its little white flowers are everywhere in evidence, while in certain spots, particularly on the eastern slope, many of the flowers are a delicate blue shade. Asso-

ciated with it are great masses of the twin flowers (*Linnaea borealis*), the creeping dogwood (*Cornus canadensis*), *Clintonia uniflora*, and the little white "inside-out-flower" (*Vancouveria hexandra*), with its airy 6-sided leaves.

At Summit Meadows, near Summit ranger station, and to a less extent on Hood River Meadows, are numbers of the tall half-closed gentian (*Gentiana sceptrum*). Along the rocky cliffs and ridges of the Zigzag Canyon there are some splendid displays of a shrubby ever-green pentstemon (*Pentstemon cardwellii*), while scattered plants of several other species of pentstemons, the native columbine (*Aquilegia formosa*), a number of alum roots (*Heuchera* spp.), monkey flowers (*Mimulus* spp.) and several violas, add to the floral display. These plants are found in ever-changing profusion throughout the extent of the Loop Highway and changing in their relative abundance according to soil and moisture conditions. In the more open areas Indian paint brush (*Castilleja* spp.) is also found in profusion, while in the moist places along the stream banks may be found bird-bills (*Dodecatheon*), white marsh marigolds (*Caltha biflora*), and various other water-loving plants.

On the higher ridges of the mountain itself there are about five areas of outstanding floral importance. These areas can be grouped as follows: Eden Park on the northwest slope of the mountain and Paradise Park on the southwest exposure, undoubtedly the two outstanding areas on the mountain, are very similar in floral character and are grouped together for discussion.

The second area is that one which lies about and above timber line between the trail from Government Camp to the summit and White River Glacier, and the third consists of the combined Hood River Meadows and Elk Meadows areas on the southwest slope of the mountain.

There are, of course, other areas where flowers abound, but these are the outstanding districts where the flower show is extensive enough to merit considerable attention.

The writer is personally familiar with all of these areas with the exception of Eden Park, but in comparing notes with other interested persons he finds that the floral characteristics of this area are very similar to Paradise Park, the chief difference perhaps being the greater displays of heathers in Eden Park.

Paradise Park on the southwest slope of the mountain is perhaps the outstanding flora area of the mountain and the most accessible. It is reached by an easy 5½-mile trip on a good trail from Twin Bridges. It is at its best during the last half of July or early August, depending somewhat on the depth of the snow the previous winter. As early as the 1st of July there are many flowers in blossom in the park, but with the usual weather conditions there is enough soft and melting snow present at this time to make traveling unpleasant through the timber. From the latter part of July on until the first heavy frost the floral display continues at its height. The earliest blossoming flowers are the avalanche lily (*Erythronium montanum*), mountain anemone (*Anemone occidentalis*), and the little high mountain calochortus (*Calochortus lobbii*). As one passes up the trail which climbs up to the rim of Zigzag Canyon and then follows it to the Paradise Park area, the first floral display which attracts attention is the squaw grass, which blossoms luxuriantly along the canyon rim.

This trail winds through several miles of an old burn which is clothed with rhododendron, chinquapin, and other brushy growth and then enters a rather heavy stand of fir and spruce timber. Soon after entering this timber straggling avalanche lilies appear and soon the hillsides along the trail are covered with them. These continue in profusion all through the timber and in and about the clumps of trees at timber line, sometimes, entirely carpeting the ground with their nodding white blossoms. In the open glades and areas at the time when the erythronium display is at its height, *Anemone occidentalis* will be in bloom and the first pale yellow flowers of the calochortus will be putting in their appearance. Later these same glades and open places will become almost solid masses of lupines of several species.

About the base of the scattered trees it is common to find great clumps of pale blue polemoniums (*Polemonium pulchellum*), and occasionally all of these things may be in bloom on the same date, although the avalanche lilies are usually past their prime when the display of other flowers is becoming good.

Scattered clumps of squaw grass are also putting in their appearance, while above timber line potentillas form irregular patches of bright yellow. This earliest flower show is usually at its height in the first two weeks in July, although the date varies considerably with the season.

In early August the areas in the timber-line parks are at their best. Along the creeks are solid banks of pink and yellow monkey flowers (*Mimulus lewisii*) and (*M. langsдорфii*?), while just above are mats of the pink heather (*Phyllodoce empetrifolia*). In most of the parks the other two heathers, *Phyllodoce glanduliflora* and *Cassiope mertensiana*, are distinctly a minor element in the display. In the swampy places formed by the trickle of melting snow water on the steeper slopes are to be found masses of *Dodecatheon jeffreyi* and *Saxifraga tolmiei*. This latter is a curious lush-looking little plant which seems to require dry soil, but a location where its feet may be in ice water.

On the ridges above the creeks are found great areas of mixed flowering plants. In Paradise Park, potentillas, dwarf lupines, castilleja, and pentstemons furnish a large part of the color. Other flowers that occur are erigerons of several species. *Lutkea pectinata*, some patches of *Pentstemon menziesii*, and the dwarf *Juniperus communis nana*, although these latter two are not as conspicuous as in other areas on the mountain.

The entire park area is furrowed and cut by canyons to the line of vegetation high up toward the Zigzag and Reed Glaciers. Eden Park area is very similar to the one just described except that there may be some variation in the abundance of the various plants.

Next to these two the most outstanding flower area on the mountain is the area below White River and Palmer Glaciers and about the head of Still Creek. This is an entirely different type of vegetation. Paradise Park and Eden Park areas are well watered and well vegetated areas, quantities of grass and sedges of various species being mixed in with the flowering plants. The Still Creek area is mostly a pumice desert with a few creeks in the bottoms of rather steep and deeply eroded canyons. Along these streams the display of monkey flowers and heathers is much the same as in the other park areas, but

here the resemblance ends. The outstanding plants of this area are *Phlox diffusa*, one of the dwarf mat-forming phlox for which the Cascade Mountains are famous, and *Pentstemon menziesii*. Next to these in interest are the great mats of dwarf creeping junipers, various eriogonums and the little pussy-paws (*Spraguea multiceps*), which is found here in abundance. This area is accessible by several trails, including the one from Government Camp, the old Still Creek Trail, and an easy climb from the highway crossing of White River. Occasionally as one travels up the timbered flanks of the mountain there are swampy areas filled with *Dodecatheon jeffreyi* and *Caltha*. There are some especially fine meadows of this type in the area to the east of the Still Creek Trail, although much of this area has been burned over, and squaw grass and lupine furnish the flower show on the upward climb until nearing timber line. As the traveler reaches the lighter pumice soils, *Calochortus lobbii* begins to appear in abundance, and just below timber line in the open parklike areas is the finest display of *Phlox diffusa* which the writer has ever seen anywhere. Soil and drainage conditions here must be absolutely perfect for this plant, judging from the number and vigor of the specimens seen. Plants in this pumice desert area do not form sordid mats, but thousands of plants varying from tiny seedlings to clumps a foot to 18 inches across, dot the landscape. In some areas the phlox is present almost to the exclusion of other plants, while in others it is intermingled with calochortus, a sedge or two, and a dwarf dock of a species unknown to me.

Above timber line the dwarf juniper sprawls in great circular masses. Pussy-paws are sprinkled indiscriminately over the entire landscape, while on the pumice ridges making the last stand of vegetation on the mountain side are great mats of *Pentstemon menziesii*. This plant here makes the most gorgeous pentstemon display I have ever seen in the Oregon mountains, there being thousands of these clumps varying from 6 to 8 inches to 3 feet or more across.

In some of the little canyons below Palmer Glacier are white mats of *Lutkea pectinata*, and everywhere are dotted single plants of yellow flowered *Eriogonum umbellatum*.

Delphiniums, asters, dwarf lupines, potentillas, and one or two other pentstemons add to the show, but the phlox, the *Pentstemon menziesii* and the eriogonums are responsible for the floral beauty of this part of the mountain.

The third type of area on the mountain of flower value, is the Hood River Meadows and Elk Meadows district. Hood River Meadows adjoining the highway is of considerably less interest than the Elk Meadows, which lies somewhat higher up. These are both well watered, comparatively level areas, especially interesting for their displays of the various tiny meadow violas dodecatheons, calthas, and other plants of a similar nature. Elk Meadows lies some 3 miles from the end of the closest approaching roadway and is a very beautiful spot on the mountain side. The entire meadow is covered with grasses and sedges among which one must look for *Viola Macloskeyi*, and other tiny flowers. Around the edge is the finest display of the small white *Rhododendron albiflorum* on the mountain. There are spots in these meadows where the display of *Dodecatheon jeffreyi* is exceedingly fine, and on Elk Mountain, near

by, are found displays of *Pentstemon acuminatus*, *Phlox diffusa* in tangled masses on the rocks, and the only station known to the writer of *Gormania watsoni*, a rather rare sedum-like plant with cream-colored blossoms.

Along the trail and the edges of the meadows the usual display of lupines and paint brush is found, while mimulus borders the creeks.

These are the flower areas of established value on the Mount Hood area proper and any recreational development of the mountain should certainly take into account their preservation. While of somewhat smaller extent than the famous flower parks on Rainier, they are of equal floral beauty.

The Still Creek area in particular is unique and easily accessible. Because of the difficult growing conditions in this light pumice soil, this area could be more easily ruined by thoughtless vandalism than the other parks on the east or west slope of the mountain, and special attention should be paid to it in planning the highest recreational use of this area.

Included in the Mount Hood Forest and also in the Mount Hood area designated for review in this memorandum is an area extending north to the Columbia Highway from Eagle Creek to a point east of Shell Rock Mountain. This area in its higher parts has all the characteristics of the lower slopes of Mount Hood so far as flora is concerned. Toward the Columbia River it breaks off into a series of sheer basaltic cliffs, many of which are covered with masses of flowering plants of considerable interest. Along the Columbia River Highway itself and in the valleys and wooded areas such plants as houndstongue (*Cynoglossum grande*), Oregon sunshine (*Eriophyllum lanatum*), columbine (*Aquilegia formosa*), and the wild bleeding heart (*Dicentra formosa*) are found in abundance enough to make a very vivid flower display when they are in bloom. These plants furnish the color note in the higher areas in late April and early May. Toward the western end of this area may be found scattered colonies of *Synthyris reniformis*, a very beautiful woodland flower of the early spring, and to the curious seeker in the secluded canyons may come the pleasure of finding real Dutchman's breeches (*Dicentra cucullaria*) tucked away beside some sheltered rock.

Tall growing *Delphinium trolliifolium* may be found in the woodlands in May, and it is not impossible to find the western lady slipper (*Cypripedium montanum*), or the beauty of all western lillies *Lilium washingtonianum*, if one is fortunate. In the woodlands also are masses of the usual woodland flowers, particularly *Vancouveria hexandra*, *Viola glabella*, and *Viola sempervirens*. In June the stately white plumes of goats' beard (*Aruncus aruncus*) appear along the cliffs and the edges of the woodland. This is one of the glories of the roadside during its blooming season where it is not mowed by some overenthusiastic highway maintenance man.

It is the basalt cliffs which furnish, however, the great bulk of the interesting plants in the Columbia Gorge. Along their bases and in the talus slopes are found wild lilac (*Ceanothus* sp.), which may be either creamy white or delicate blue. Wild red currant (*Ribes sanguineum*), the earliest blooming shrub, is also present in enough numbers to make a very real flower show during the month of April, while many other shrubs of lesser importance contribute their share. Later in the season flowering dogwood (*Cornus nuttallii*), and ocean

spray (*Holodiscus discolor*) are conspicuous elements in the flower display.

On the basaltic cliffs hang great masses of our two best native saxifragas, namely, *Saxifraga bronchialis* and *S. caespitosa*, the former a spiny leaved plant with numbers of pink and white flowers being particularly abundant. These two, together with *Sedum spathulifolium*, *S. douglasii*, and one or two unidentified sedums form a mass of foliage cover on the cliffs, the gray leaf rosettes of *S. spathulifolium*, together with the red stems and yellow flowers, making a striking show.

Campanula rotundifolia is also a common plant along the highway and its sprays of tiny blue bells can be seen hanging from the cliffs during June. *Pentstemon diffusus*, a rich blue; *P. richardsoni*, a pink; and *P. rupicola*, a bright red are also cliff flowers of real beauty, which occur in varying numbers in this area. Along the road sides, *P. ovatus* and several others are found in limited numbers, while *Lilium columbianum*, the little wild tiger lily, is scattered everywhere.

This by no means exhausts the list of plants in the Mount Hood region, but it gives the ones particularly responsible for the profusion of color which exists in this area in April, May, and June.

A detailed list of plants found in the Mount Hood region is given in the appendix.

(d) Biological, bird (by Ira N. Gabrielson, United States Biological Survey): The birds of the Mount Hood region do not differ materially from those of similar peaks of the Cascades of both Oregon and Washington, but the accessibility of the timber-line country gives this area a peculiar attraction to eastern visitors.

Perhaps the presence of Hepburn's rosy finch (*Leucosticte tephrocotis littoralis*), near the snow fields and glaciers, is the outstanding point of interest. This is one of the few Oregon stations for this bird, and even here it is necessary for those wishing to see them to climb to the glacial moraines above timber line to find them. They are by no means a common bird, but seem to be found every year in limited numbers around Zigzag and Sandy and Eliot Glaciers, and at least occasionally around some of the others.

About the base of the mountain in the wooded areas, both the Oregon ruffed grouse (*Bonasa embellus sabinii*), and sooty grouse (*Dendragapus obscurus fuliginosus*), may be found, the hooting of the males of the latter being one of the interesting things in the early spring months. Raptorial birds are not particularly abundant. Turkey vultures (*Cathartes aura septentrionalis*), are frequently seen, and sharp-shinned hawks (*Accipiter velox*), Cooper hawk (*Accipiter cooperii*), and red-tailed hawks (*Buteo borealis calurus*) are fairly common. The western goshawk (*Astur atricapillus striatulus*), is present but not abundant, being usually found high up on the wooded shoulders of the mountain. Dusky horned owls (*Bubo virginianus saturatus*), are occasionally seen and very frequently heard, living in the more heavily wooded portions, while the sparrow hawk is abundant in the more open glades and in the burned-over areas, particularly during the migrating periods.

In common with other wooded sections of the Pacific Northwest, the Mount Hood region is well supplied with woodpeckers; the all-abundant one here as elsewhere is the Northwestern flicker (*Colaptes*

cafer cafer). The Harris woodpecker (*Dryobates villosus harrisi*), is common. The Lewis woodpecker (*Asyndesmus lewisi*), is found commonly in migration, and the northern red-breasted sapsucker (*Sphyrapicus ruber notkensis*), and Arctic three-toed woodpecker (*Picoides arcticus*), may be looked for as rather uncommon. On the eastern slope in the yellow pine belt, Williamson sapsucker (*Sphyrapicus thyroideus*), and the white-headed woodpecker (*Xenopicus albolarvatus*), may be added to the list, while all through the wooded areas the work of the western pileated woodpecker (*Phloeotomus pileatus picinus*) may be noted, and occasionally this huge black woodpecker itself will be seen.

Hummingbirds are represented by one species, the Rufous hummer (*Selasphorus rufus*), which is abundant in the timber-line parks in August at the height of bloom of minulus and lupine. The hummers are common visitors, apparently gathering in the flower parks from a wide area.

Vaux swift (*Chaetura vauxi*) may occasionally be seen, and the Pacific nighthawk (*Chordeiles virginianus hesperis*), in migration, is at times quite abundant in the lower areas on the mountain. Among the flycatchers are both Traill flycatcher (*Empidonax trailli trailli*), and Hammond flycatcher (*Empidonax hammondi*), and western wood pewees (*Myiochanes richardsonii richardsonii*) are common. One of the outstanding birds is the olive-sided flycatcher (*Nuttallornis borealis*), whose wild eerie call echoing up and down the canyons through the summer months, always seems to me to be the voice of the mountains themselves.

Gray jays (*perisoreus obscurus griseus*) are abundant and one of the most interesting birds to be found. Like all other members of the perisoreus group, they quickly reconcile themselves to human presence and become great thieves and despoilers of picnic lunches at regular camp sites. The crested jays (*Cyanocitta stelleri sub-sp.(?)*) found in this area are intermediates between the coast form and the eastern cascade form of the stellar jay. Regardless of the subspecies, they are the same impudent, inquisitive birds. At times they are abundant and usually are one of the most conspicuous birds on the mountain. Near timber line a third member of the group may be seen winging his way from the top of one tree to the next. Clark nutcracker (*Nucifraga columbiana*), with its conspicuous gray and white suit and noisy voice, is one of the outstanding birds of the mountain and should be one of the main attractions from a bird lover's standpoint. There are few places in the Oregon mountains so easily reached, where these birds are at all abundant, and, to the writer at least, it is quite a novelty to drive an automobile into their haunts. To me they are inseparably associated with isolated parks and timber-line valleys, and it is difficult to fit them in with automobile roads.

In the fall of the year the upward movement of many birds, following the nesting season, results in the presence of large numbers of lowland species in the mountain parks. Among the mwestern meadowlarks (*Sturnella neglecta*), and Brewer blackbird (*Euphagus cyanocephalus*) are conspicuous, together with a great host of sparrows. The sparrow family is well represented here as elsewhere in the Oregon mountains. Evening crosbeaks (*Hesperiphona vespertina brooksi*), are numerous throughout the season, as are the California purple finches (*Carpodacus purpureus californicus*) Cassin purple finch (*Carpodacus*:

cassini), and Hepburn's leucosticte mentioned above, will be the outstanding sparrows found. In addition to these, willow goldfinches (*Astragalinus tristia salicamans*), and pine siskins (*Spinus pinus pinus*), are abundant at times, while during the spring and fall migrations the old burns and bushy areas fairly swarm with nuttall sparrows (*Zonotrichia leucophrys nuttalli*), golden-crowned sparrows (*Zonotrichia coronata*), western chipping sparrows (*Spizella passerina arizonae*), and song sparrows (*Melospiza melodia morphna*), as well as Schufeldt juncos (*Junco oreganus schufeldti*). On the open meadow lands one finds an equal abundance of Savannah sparrows (*Passerculus sandwichensis slaudinus*), and vesper sparrows (*Pooecetes gramineus confinis*), particularly in September, and occasionally great invasions of American pipits (*Anthus rubescens*) occur at the same time. Fox sparrows (*Passerella iliaca sub-sp.(?)*) are present in numbers in some seasons, many of the Alaskan subspecies using the Cascade summit as a highway in their southward movement in September and early October.

Western tanagers (*Piranga ludoviciana*), are abundant and one of the most brilliantly colored birds found in the area. Warblers are not a conspicuous fauna, but lutescent warblers (*Vermivora celata lutescens*), California yellow warbler (*Dendroica aestiva brewsteri*), Audubon warbler (*Dendroica auduboni auduboni*), black-throated gray warbler (*Dendroica nigrescens*), Macgillivray warbler (*Oporornis tolmiei*), may be found regularly in suitable areas, while one should always keep a lookout for the Townsend warbler (*Dendroica townsendi*) by no means an abundant bird in any part of Oregon. In addition to the warblers, cedar waxwings (*Bombycilla cedrorum*), western warbling vireo (*Vireosylva gilva swainsoni*), and Cassin vireos (*Lanius solitarius cassinii*), are among regular summer residents.

The dipper (*Cinclus mexicanus unicolor*), is a regular year around inhabitant of the swift streams throughout the area. They may be classed with the leucosticte, the gray jay and Clark nutcracker in popular interest, their unique habits of feeding under water together with their beautiful song, causing a great deal of interest in these stubby little birds.

In the woodlands the western winter wren (*Nannus troglodytes pacificus*), Sierra creeper (*Certhia familiaris selotes*), slender-billed nuthatch (*Sitta carolinensis aculeata*), red-breasted nuthatch (*Sitta canadensis*), Oregon chickadee, (*Penthestes atricapillus occidentalis*), mountain chickadee (*Penthestes gambeli gambeli*), and chestnut-backed chickadee (*Penthestes rufescens rufescens*), western golden-crowned kinglet (*Regulus regulus olivaceus*), and Sitka kinglet (*Regulus calendula grinnelli*), are present in about the usual numbers in similar life areas.

These birds furnish the bulk of the winter bird residents as well as a very conspicuous element in the rather scanty bird population of the more heavily timbered area. Townsend solitaire (*Myadestes townsendi*), is found, but is not an abundant bird in this area. The western robin, (*Planesticus migratorius propinquus*), varied thrush (*Ixoreus naevius naevius*), and both the western bluebird (*Sialia mexicana occidentalis*), and mountain bluebirds (*Sialia currucoides*), are present during the summer months and the varied thrush is more or less of a year-around resident. Bluebirds and robins are conspicuous in timber-line parks in August and September following the nesting season

and may often be found in numbers far above picking up insects about the snow fields.

This is not a complete list of the birds found in the Mount Hood area, but at least will give an idea as to the things which may be looked for with some hope of success.

Water birds are absent except for occasional stragglers, as suitable situations for them are practically nonexistent. Otherwise the Mount Hood area has a representative collection of Hudsonian and Canadian zone species. The Arctic alpine is represented by such a small area that the *Leucosticte* is the only definite species belonging to this zone, although there are a number of plants that can be so classified.

ARCHAEOLOGICAL

There are no archaeological values in the Mount Hood region.

3. DEGREE OF ACCESSIBILITY

As compared with other snow-capped peaks in the Cascade Mountains, the Mount Hood region is exceptionally accessible by road and trail.

The road and trail system has been developed with the main purpose in mind of better fire protection and without much regard to recreational developments. Exceptions are the Mount Hood Loop, the Cloud Cap Inn Roads, and the forest camp and summer home roads. A dirt road instead of a macadam highway would have met the needs of the Forest Service, and the Mount Hood Loop was built by the Government and State to its present high standard to satisfy the demand for motor highway for recreational use. It is used by some 400,000 people a year. The Cloud Cap Inn Road was built by the Forest Service partly for recreational use.

Additional road development is needed for more intensive fire protection. The two most important projects needed are the Lolo Pass Road from the Mount Hood Loop to Lost Lake and from the upper Hood River Valley to Red Hill. The road under construction eastward from Larch Mountain is projected to Lost Lake with a branch connecting with the county roads at Greenpoint. A road from the Mount Hood Loop to timber line on the south slope of Mount Hood is needed for recreation. This should be a high-class macadam highway equal in standard to the Mount Hood Loop.

A trail encircling the mountain just below the glaciers would be a valuable development for recreation use. There is some demand for a road from the Loop Highway to Paradise Park, an extension of the Cloud Cap Inn Road over Coopers Spur, and a road to Eden Park. None of these proposed roads are recommended.

With more intensive recreational use of the mountain following further resort developments, a considerable mileage of bridle paths and foot trails would be advisable. The only proposed trails shown on the attached map 1b are for more effective fire protection.

The main spur roads leading into the area are Cooper Spur leading to Cloud Cap Inn and the Lost Lake Road.

The main traveled recreation trails within the area are Eagle Creek Trail from Columbia River Highway to Lost Lake; trail from Multnomah Falls or Waukeena Falls to Larch Mountain; trail from

Government Camp to timber line on Mount Hood; trail from Zigzag River to Paradise Park. Other trails are used to a lesser degree.

The present demand for road development is from Government Camp to timber line on south side of Mount Hood.

4. SUMMARY OF MATERIAL RESOURCES

(a) Operatable timber, million board feet (by Geo. L. Drake, logging engineer): The timber of merchantable size of the desirable species that occurs in bodies of sufficient size to make a practical logging unit is found in the following units:

West Fork Hood River.—The amount of timber available to the Dee mill of the Oregon Lumber Co. was estimated by Logging Engineer Address, of the Forest Service, at the time he made the appraisal in 1916 of the area now under sale to be as follows:

Area	National forest sale (million board feet)	Adjacent national forests not sold (million board feet)	Private timber to be cut with sale timber (million board feet)	Adjacent private timber to be cut with sale timber (million board feet)	Total (million board feet)
T. 1 S., R. 8 E.....	360,000		120,000		480,000
T. 1 S., R. 8½ E.....					
T. 1 S., R. 9 E.....					
T. 1 S., R. 8 E.....		90,000		70,000	160,000
T. 1 N., R. 8 E.....		260,000			260,000
Outside national forest.....				100,000	100,000
Total.....	360,000	350,000	120,000	170,000	1,000,000

At the time the new contract was drawn up in 1927 a reduction of 150,000,000,000 board feet was made in the timber considered available to the tap line up the West Fork. The timber eliminated lies on the upper slopes and due to the high percentage of inferior species can not be operated under present-day market conditions. It is felt that the original estimate as to available volume is reliable and that the eliminated timber can be operated at a later date, and hence can be considered as being operatable. The present sale runs to November 30, 1933, and there remains to be cut some 90,000,000,000 board feet.

After logging is completed in the present location, the next show is in township 1 south, range 8 east, and township 1 north, range 8 east, where there is 350,000,000,000 of Government timber and 70,000 of private within the forest boundary, together with some 100,000,000,000 of private outside the forest boundary, which at the past rate of cutting will prolong the life of the mill some 15 to 20 years, by which time it may be economically possible to log the timber eliminated from the present sale and similar timber to the east on the Middle Fork.

Middle Fork Hood River.—On the Middle Fork the extensive cruise shows a stand of 120,000,000,000, of which 80,000,000,000 is Douglas fir and the remainder hemlock and white fir. This timber lies on ground favorable for logging and this timber should find sale to the Dee Mill when the heavier stands north of Lost Lake are cut.

East Fork Hood River.—The extensive estimate shows a stand of 40,000,000,000 on the East Fork watershed, of which half is Douglas fir, the associated species being hemlock, noble, and white fir, and cedar. This timber is directly accessible to the Loop Highway and under more favorable market conditions it can be operated by semi-portable mills.

Herman Creek.—On Herman Creek are several bodies of timber that have escaped the severe fires of the past, which are estimated to contain 80,000,000,000 of Douglas fir and 10,000,000,000 of hemlock. Several inquiries for this timber have been received, but it is felt that, due to the heavy construction costs, the timber is not economically ripe. This timber is of good size and quality.

Sandy River.—On the Clear Fork and Lost Creek branches of the Sandy River in township 2 south, range 8 east, are two bodies of mature timber with a stand according to the extensive of 90,000,000,000, 70 per cent of which is Douglas fir. This timber could be trucked out, but, due to the long haul, it could not be operated at a profit under present conditions.

Summary, operatable timber, Government timber only

	1,000 board feet
West Fork Hood River.....	590, 000
Middle Fork Hood River.....	120, 000
East Fork Hood River.....	40, 000
Herman Creek.....	90, 000
Sandy River.....	90, 000
	<hr/>
	930, 000

Eliminating the Sandy River unit, due to its being within the Bull Run division, leaves a total of 840,000,000,000 board feet. There are tag ends of mature timber like on the heads of Salmon River and Still Creek that escaped the severe fires of the past, that are to-day non-operative, due to distance from market and lack of roads, but which can be operated when the young growth at the lower elevations becomes of merchantable size. These tag ends, due to the small amount involved, are not included in the above estimates. Most of the old burns are restocking.

Forage, approximate forage acres (by E. N. Kavanagh, chief of range management): Within the area delineated as the tentative Mount Hood recreational territory there are several allotments where the grazing of stock is provided for. All of these allotments are for sheep, with the exception of one small area on the Middle Fork of Hood River, south and east of Parkdale, where 25 head of cattle owned by local settlers have been allowed to graze for many years. It is estimated that the allotments affected by the proposed recreational area are at least capable of taking care of 15 bands of sheep of 1,000 head each in addition to the small bunch of cattle, 25 head, heretofore mentioned. The sheep are grazed during a season of three months from approximately July 1 to September 30 and the cattle for a five and one-half months' season from about May 1 to October 15.

The flora of this region, which makes up in part the forage resources, is described elsewhere in this report. The actual forage resources in the vicinity of Mount Hood are typical of those found in the higher elevations of the Cascade Range, consisting largely of

palatable species of browse, weeds, grasslike plants and some grasses. Some of the bunchgrass species that originally constituted a large part of the vegetation in the more open places have been replaced by plants and grasslike plants as, for example, the glacier lily which now grows in profusion on many of the old sheep bedgrounds. While many of the plant species are palatable for livestock, quite a few, and some of them the most showy plants, are unpalatable and are not grazed by either sheep or cattle. This in part accounts for the fact that even after areas have been grazed by stock there still remain many of the more beautiful flowers for which this region is noted. The early blooming varieties of plants which dominate the landscape in late May and June have, over most of the area grazed by stock, completed their growth and developed seed prior to the grazing season and are therefore not used or considered as forage resources.

All of the range within the territory capable of being used for grazing purposes is not so used. At the present time and for the past few years only 12 of the 15 bands of sheep, which the region could take care of, have been permitted. The other range unused and unallotted for many years, for three additional bands, has been closed to grazing for one purpose or another, primarily, however, with the intention of providing positive protection of water supplies for domestic or irrigation purposes.

The area at present is furnishing a large part of the forage for approximately 12,000 sheep and 25 head of cattle.

Water power (by Regional Engineer P. H. Dater): Proposed water-power projects fall into two groups. One group involves two reservoir sites. The other group involves several stream diversions and one large and possibly two reservoirs.

Group 1.—Northwest of Mount Hood. Application was filed with the Federal Power Commission by H. L. Vorse, of Portland, in November, 1927, for a project that involves the use of Lost and Wahtum Lakes as storage reservoirs. Water would be conveyed by pipe conduit 16 miles or more in length from the lakes to a power house on the bank of the Columbia River a short distance below Cascade Locks. The application proposes the construction of a dam at Lost Lake to raise the water level 30 feet, which, therefore, is the measure of the fluctuating water level. Storage capacity, about 7,500 acre-feet.

The Vorse application covering Wahtum Lake proposes to raise and fluctuate the water level 25 feet. Storage capacity, about 2,000 acre-feet.

Preliminary computations of power capacities for Lost and Wahtum Lakes combined are:

	Horsepower
Continuous power using storage.....	9, 900
Natural flow only (i. e., not using lakes for storage), minimum.....	750
Natural flow, 6 months.....	8, 700

Group 2.—South and southwest slopes of Mount Hood. Water power from the small streams near the south base of the mountain has been proposed for many years. Joseph R. Keep, of Portland, has been active in power and irrigation promotions about Mount Hood for many years. His power rights were assumed by the Oregon-California Hydroelectric Co., which company filed application with the Federal Power Commission for a preliminary power permit

August 27, 1924. The original plan was highly impracticable, involving some dozen and a half diversions. The diversions included Clear Creek, Sandy River, Henry Creek, Devil Creek, Lady Creek, Zigzag River, Little Zigzag River, Camp Creek, Still Creek, and Salmon River. Most of these diversions would have been above the Loop Road.

The Oregon-California Hydroelectric Co. made surveys during 1925 and filed a revised scheme of development. A second revision was made but was never filed with the power commission. The second revision proposed diversions at approximately elevation 3,900 of Zigzag and Little Zigzag Rivers, Sand Creek, and Still Creek. A reservoir was provided in Salmon River Meadows at elevation 3,310 with a storage capacity of 22,000 acre-feet. The scheme involved the diversion of the above streams into Mud Creek and the diversion of the augmented waters of Mud Creek to Salmon River Meadows reservoir. The plans call for a 110-foot dam on Salmon River in section 14, township 4 south, range 8½ east. The stored water used through power plants near Linney Creek, Welches, and Marmot during six months from July to December is estimated to add slightly in excess of 8,000 horsepower to the output of the three plants.

There is an existing diversion of Camp Creek for domestic and lighting uses at Government Camp Hotel. There is a proposed diversion of Camp Creek for lighting and power uses at Battle Axe Inn. As the Government Camp region develops other similar diversions may become desirable.

There is an existing Federal Power Commission license issued to Boyd Summers for two small power projects on Still Creek. These plants are for lighting and power uses at the resort at Swim, which resort is under special use permit issued by the Forest Service.

Reservoir sites for irrigation (by Regional Engineer P. H. Dater): There are no known sites for strictly irrigation purposes within the Mount Hood area. Clear Lake, about 2 miles south of the area, is a part of the Wapinitia irrigation system.

The city of The Dalles has a pending application for a special-use permit on file with the Forest Service, which application involves the diversion of Cold Spring Creek and the storage of water in Lost Lake. The application is primarily for domestic water supply although considerable irrigation use appears probable. It is proposed to divert 30 second-feet from Cold Spring Creek near the north line of section 19, township 2 south, range 10 east, by conduit and tunnel to the South Fork of Mill Creek, from which stream (augmented by a diversion from Dog River) the city now obtains most of its water supply. The proposed diversion of Cold Spring Creek would affect irrigation rights on the East Fork of Hood River. To satisfy these rights the city proposes to divert Evans Creek to the East Fork and Clear Creek to Evans Creek. These diversions affect water rights (mostly power) farther down the stream. To meet this situation it is proposed to divert the West Fork of Hood River to the Middle Fork. To recompense for the water diverted from West Fork the city proposes to use Lost Lake for a storage reservoir. The plan calls for the raising of the water level 20 feet, with a possible lowering of 5 feet, or a total fluctuation of 25 feet. The reservoir capacity would be approximately 6,200 acre-feet.

Mining, kind and extent, present, probable (by W. M. H. Woodward, mineral examiner): There has been a little prospecting within the area but in the 15 years that I have lived in Portland I have never heard of any mine anywhere in the region. A few years ago there were a number of locations made in the vicinity of Horse Thief Meadow in section 36, township 2 south, range 9 east, and section 1, township 3 south, range 9 east. I examined these claims and found no evidence or indications of the probability of a paying mine being developed, but selected samples did assay from \$2 to \$6 per ton in gold. I noted a very small area on one of the claims that had been placered in pioneer days. The county records disclose that there were also a number of locations in that same general vicinity which were well away from the highway and were not visited by me.

The annual assessment work may have been kept up on one or more of these claims, but I was told two or three years ago that the claimants had lost interest.

Some four or five years ago the newspapers reported that the same prospector who held the claims at Horse Thief Meadows brought some good-looking specimens of mineral into Hood River, claiming to have found them on the north side of Mount Hood, but refusing to reveal the exact location. I have never heard anything further in regard to this alleged discovery.

About two years ago there was considerable excitement in section 15, township 3 south, range 8 east, which made the front page of the Portland Oregonian. The cause of this excitement was an assay certificate showing high values in the platinum group of metals from an assay office in Grants Pass, which is notoriously in the habit of writing such certificates. I believe that the claims in this locality are now all abandoned.

An occasional abandoned prospector's hole can be found in the area on which this report is requested. I recall a typical one in the bank of Eagle Creek almost in the Eagle Creek camp ground.

A discussion of the probable mining in the future must be based on the geology of the region. So far as known, Mount Hood is composed of rocks of Tertiary age. Much of it is basaltic lava and cinder but some appears to be andesite. A sheet of Columbia River basalt, exposed along the Columbia River Highway, probably underlies most of the Mount Hood area.

While many of the valuable ore deposits of the West were formed in Tertiary times, the rocks of Tertiary age are notoriously barren. I know of no reason why these rocks are incapable of being mineralized, and the explanation probably is that mineral is formed at considerable depth and rocks formed in Tertiary time have always been too near the surface to be mineralized.

I once noted 200 or 300 acres of sedimentary rocks much older than the mountain, high up on the south side of Mount St. Helens surrounded by extremely recent lava, and it is possible that one or more similar areas may exist somewhere on Mount Hood. Such an area brought to the surface by block faulting is the only chance that I can see for a valuable deposit of mineral above the level of the bottom of the Columbia Gorge.

I therefore conclude that the development of any valuable deposits of mineral in the region covered by this report, while not absolutely impossible, is highly improbable.

The chance for oil is a little better. The Cascade Range forms a broad north and south anticline in the summit of which the extreme upper edge of the sedimentary formations is exposed at Eagle Creek and Cascade Locks. Nothing is known of the formations below that called the Eagle Creek, which is a sedimentary of Tertiary age. A number of prerequisite conditions must coincide to produce a valuable deposit of oil, and when this does happen the oil collects in the anticlines. The formations known to be nonproductive of oil are so thick over most of this area that they are never likely to be drilled unless oil is proved to exist in great quantities, but it is probable that some one will drill a wildcat well sometime in the vicinity of Cascade Locks. The probability of success in such an adventure is too remote to make it attractive under present conditions of overproduction of oil.

AGRICULTURAL LAND

There is no national forest land which has value for agriculture.

In township 1 south, range 9 east, 2,442 acres were listed under the forest homestead act of June 11, 1906, as "chiefly valuable for agriculture." This lies east of the lava beds, adjoining the upper Hood River Valley, in an old burn. Fifty acres of this has reverted to the county for nonpayment of taxes, and only an estimated 160 acres is in cultivation.

In township 2 south, range 10 east, 890.92 acres were listed. One homestead was abandoned and the entry canceled. One is used as a summer hotel, and the rest are not farmed.

On patented land along the Columbia River Highway a little garden truck is raised for local consumption, and some hay for dairy stock.

Hotel, resort, and summer homes (by T. H. Sherrard, forest supervisor): The only hotel under permit within the area is Cloud Cap Inn. There are four privately owned hotels: Government Camp Hotel, Homestead Inn, Battle Ax Inn, and Rhododendron Inn. There is no adequate hotel near Mount Hood. There should be at least two adequate hotels on national forest lands, one at Cloud Cap and one at timber line on the south side of Mount Hood. There should be at least two adequate hotels on private lands, one at Lost Lake and one at Government Camp.

There are three resorts with cabins for rent: Zigzag Forest Camp, Swim, and the Blue Bucket. All of these are small developments and none is an outstanding success as yet. There are small cabin developments on private lands in connection with Homestead Inn and Battle Ax which are moderately successful.

Of the two pay camps under permit on national forest, Zigzag Forest Camp and White River Forest Camp, the latter is new this year. It is doubtful whether a pay camp on the Mount Hood Loop will succeed financially as both are in the experimental stage. Summer home site development within the national forest has progressed rapidly on the western end of the loop where there are already 368 sites under permits. Additional sites are needed in that vicinity. There has been no progress as yet in summer home developments on the Hood River end of the Loop Highway, although many attractive sites are available. There is demand for home sites at Lost Lake, chiefly from people who live in the Hood River Valley. All recreational developments at Lost Lake are held up pending action upon

application for storage of water for power and irrigation in Lost Lake. It is anticipated that there will be a small demand in the immediate future for home sites at a high altitude within the south slope and summit sections of the Mount Hood Loop area where sites have been recently platted and will be available for the first time this season. It is quite likely that this demand will grow.

There are four resorts classed as club sites on the Mount Hood Loop, one at Cloud Cap Inn. There are four winter sports playgrounds for skiing; two include toboggan slides.

Hotel developments are planned at four points on the Mount Hood Loop, one at timber line on the south side of the mountain and one at Cloud Cap to replace the present one. Of these none are in immediate prospect except the one at Cloud Cap Inn.

Operating and protection works existing and required (by T. H. Sherrard, forest supervisor): The operation and protection improvements are as follows:

Existing fire breaks, Bull Run, 2 miles long. Proposed: None.

Existing fire lookout stations: Indian Mountain, Lost Lake Butte, Mount Hood. Proposed: Timber line, Green Point, Tanner Butte, Red Hill, Slide Mountain, Tilly Jane.

Existing patrol stations: Eagle Creek Camp, Rainy Lake, Indian Spring, Table Mountain, Lost Lake, Upper Jones Creek, Clear Creek Station, Clear Fork Station, Robinhood, Hood River Meadows, Summit ranger station, Toll Gate. Proposed: Frog Lake.

Existing ranger headquarters, with other buildings: Zigzag ranger station, Herman Creek ranger station, Eagle Creek Camp.

Other buildings proposed: Fire dispatcher, fire equipment, near Summit ranger station.

Existing fenced pasture: Zigzag, Summit ranger station, Hood River Meadows, Horse Thief Meadows, Herman Creek station. Proposed: Tanner Butte, Table Mountain, Indian Spring, Green Point, Lost Lake, Red Hill, Clear Fork station, Clear Creek station.

Existing telephone lines: 140 miles. Proposed: 4 miles.

Existing airports: Summit ranger station.

(b) Present and future significance of recreational and inspirational elements (by F. W. Cleator, recreation examiner):

To local communities and residents: The snow-capped cone of Mount Hood is plainly visible from the city of Portland. It has therefore a great spiritual influence on this city and holds a strong place in the regard of the citizens. There is some power about a high mountain like Hood that instills a certain reverence in those who see it from day to day and come to regard it as a part of their lives and property. They who have been on the summit probably feel a much stronger proprietorship.

The Mount Hood area is the mountain playground of the cities and communities of the four contiguous counties: Multnomah, Hood River, Clackamas, and Wasco. These four counties had a total population of 335,560 by census of 1920. Their estimated present population is approximately 504,000, and the estimated population in 1950 is 800,000.

Portland, the metropolis and by all odds the largest city in the region as well as of the State itself, is the principal figure in the county-population figures as given. It has a present estimated population of 390,000, which by 1950 is expected to increase to 600,000.

In these four counties also the following more-important cities and towns are mainly interested in the Mount Hood development: Oregon City, The Dalles, Hood River, Gresham, Sandy, and Troutdale.

Vancouver, Wash., and other smaller cities on the Washington side of Columbia River are local communities that could be interested, but the fact of their being in another State, even though fairly close by, is sufficient to cause a considerable lack of pride and personal interest that accrues to Oregon cities. The interests of these Washington cities, as well as some of the smaller cities west and south of Portland, will be quite incidental for the most part.

To State and residents thereof: The State of Oregon had a population of 783,389 by census of 1920 and had an estimated population of 902,000, July 1, 1928, which will probably increase to 1,800,000 by 1950.

There are several other snow-capped peaks in the Oregon Cascades as well as in the Blue Mountains and Wallowas or (Granites) of eastern Oregon. The mountain love of the inhabitants of the State is therefor considerably divided, each section being mainly interested in the nearest high mountain or mountain region if there is one near enough to become intimate with. The center of population in Oregon is, however, greatly affected by the preponderance of population in Portland and the lower Willamette watershed so that the percentage of the State population to whom the use of the Mount Hood area is and will be important is still quite high, being perhaps 20 per cent. There are, of course, a good many residents of the State now living at some distance, but who having either resided previously in the northwestern part of the State or because of a broader general interest in the great scenic features of the State take a real interest in the Mount Hood area and its development.

To Nation as a whole: The population of the United States July 1, 1928, is estimated at 120,013,000, which should increase to 150,000,000 by 1950.

Rather than attempt to give definite answer in percentage as to importance of Mount Hood area to each of the three classes, local, State, and Nation, which would be very frankly guesswork, I am answering the question more generally and in a way that will perhaps serve the purpose as well or better.

We know that 50 years ago the use of the Mount Hood area was of importance to a very small percentage of the population of local cities of the State and cut practically no figure in the thoughts of the United States as a nation. The tourist interest in California was about the same.

At present there is probably 1 per cent of the population of the United States that actually visits California, since California has experienced a winter tourist boom. If the number of visitors to California has increased from practically nothing to 1 per cent of the Nation's total in 20 years, one may expect a considerably larger percentage in the next 20 years. The railroad has been a great factor, considering the Nation as a whole; the autos have been the greatest factor considering all classes. The airplane is at hand. What will it lead to? Continued industrial success with more time for leisure will doubtless continue progressively. It is conceivable, therefore, that Mount Hood area in 20 years will become of real interest to practically all citizens of the near-by cities, to the largest part

of the State of Oregon, and to 2 or 3 per cent of outside population of the United States as well as to many, many foreigners.

The proposed tramway to Mount Hood—not considering propriety of its installation—would if constructed have a very great influence on the interest of local cities, the State, and the Nation in the Mount Hood region. As advertising value alone it would of course greatly increase the number of visitors to the Mount Hood region, particularly the north aspect.

The city of Portland is reached by four transcontinental railway systems which advertise nation-wide tours to the western national parks and national recreation areas.

It is also reached by automobile tourists in large numbers over the Oregon Trail.

The Mount Hood area, if developed in an outstanding fashion, would attract tourists in a nation-wide manner.

(c) Availability of other areas to meet needs indicated above:

THE OCEAN BEACHES AREAS

The greatest local competitor of the Mount Hood area for outdoor recreational use—not including city amusement parks—is and will probably always be the ocean beaches fringing the Pacific. These vary from some 100 miles distant to as far as one cares to go, and the beach resorts have a very magnetic effect. Ten years ago the interest of the city of Portland was much stronger in the ocean beach than in the Mount Hood area, but construction of highways has gradually changed this about face so that the greater local interest lies in the mountain area. The Roosevelt Highway, which is now making the Pacific beaches accessible entirely through the State of Oregon, will have effects that can not be definitely prognosticated, but will most certainly draw a great deal on both local and outside tourist traffic.

The ocean beaches are of course not at all comparable to the Mount Hood area, but do serve to meet outdoor needs of the people.

Crater Lake and Rainier National Parks and to a less extent Heather Meadows (Mount Baker Forest) offer the greatest competition of any other areas of a similar character for high mountain assets; in fact, will perhaps always be more heavily visited by the tourists from other States and countries. These areas will not have much effect on local residents. Doubtless nearly every citizen of the Pacific Northwest who has an auto has seen or intends to see these two great national parks. But once visited the local State or city visitor will seldom go of his own accord again, but will prefer to frequent his own favorite playground.

FISHING AND HUNTING AREAS

The fishermen and hunters, not only local but Oregonians and other State sportsmen who may be interested, think very little of the Mount Hood area as a game or fish paradise. The great fishing features are the Deschutes River, McKenzie River, East Lake, Diamond Lake, and the coastal streams.

The favorite generally known hunting regions are the Umpqua and Siskiyou Forests.

Real experienced anglers and hunters of course hunt out territory where the other fellow does not frequent too heavily.

HOT AND MINERAL SPRINGS AREA

There is one rather mediocre thermal spring development on the Mount Hood area at Swim, Oreg. This as a hot or mineral spring resort does not have the present popularity of the following:

Government Mineral Springs, a noted soda spring resort above Carson, Wash., which is near enough Portland to compete quite heavily in outdoor favor.

The privately owned thermal springs resorts near Carson, Wash., on the Columbia River.

The hot springs resorts on the McKenzie River which, being on this very noted fishing stream, causes a very heavy competition, particularly with California visitors.

Eastern Oregon people are more interested in East Lake, Hot Lake, and other thermal spring developments.

Puget Sound populations are much more interested in hot springs in the Olympics and other local developments than in the Oregon springs.

There will probably be little national interest of any account in these spring developments, particularly in the Mount Hood springs. McCredie Springs on the Southern Pacific main line will doubtless draw some considerable future other than State interest.

LAKES RESORT AREAS

Lost Lake, in the Mount Hood area, is such a scenic gem and such a usable lake that it will always be very popular, but mostly with local cities of Hood River, The Dalles, and Portland.

Other communities of the State have their own favorite lakes, many of them superior in usableness but probably not in scenic value.

Spirit Lake in Washington is of considerable local interest and competes quite heavily with Lost Lake for northwest Oregonians.

The mountain lakes of the Pacific Northwest, Lost Lake included, usually possess shore lines and adjacent acreages too steep or otherwise unsuitable for use, but on the whole by being careful in planning it is believed that the future needs will be provided for.

STREAM AREAS

There are thousands of stream areas in the Pacific Northwest comparable or similar to those on the Mount Hood area. The popularity of these are almost entirely a local matter, except that the Columbia River, a nationally known tourist asset by way of Columbia Highway, bounds the area for a short but important distance.

FALLS AREAS

While there are many very scenic and beautiful falls in the area, there are so many others better known not far distant on the Columbia Highway, and so many in other areas of the Oregon and Washington Cascades, as well as other mountain regions, that it may not be said that the falls of Mount Hood area have any noticeable effect on a large amount of local populations, or on State or other State citizens.

PRIMITIVE AREAS

The proposed primitive area on Mount Hood will not perhaps compete heavily in popularity as compared to other proposed or reserved primitive areas in Washington and Oregon. However, it will be a favorite haunt of a great many local people. Heavy usage of the Cloud Cap Inn neighborhood, as, for instance, by installation of the proposed tramway, would of course introduce a much heavier and more generalized interest in the Mount Hood primitive area. The character of the area and lack of auto or other mechanical transportation within the primitive area itself will of course discourage heavy human traffic.

As for State and National interest, it is most likely that the great Olympic primitive area and the proposed Wallowa and North Cascade primitive areas will offer more drawing power.

It is quite certain that with careful planning of all recreation and scenic assets of the national forests of Oregon and Washington that the probable maximum needs may be adequately provided for. There is opportunity for much more concentration of visitors and still leave nature fairly well unhampered.

(d) Attitude or sentiment of interested groups (by C. J. Buck, chief of lands):

On December 2, 1926, the district forester addressed a letter to the following organizations: Trails Club, Portland Oregonian, Portland Journal, Portland News, Portland Telegram, Portland Chamber of Commerce, Hood River Chamber of Commerce, Oregon State Chamber of Commerce, City Club of Portland, Presidents' Council, Oregon State Motor Association, and Mazamas.

Considerable publicity was had as a result of this letter. In the case of the Oregon State Motor Association no reply was received.

All the daily newspapers of Portland expressed themselves favorable to the enterprise if properly constructed and operated. The enterprise was also indorsed by the Hood River Chamber of Commerce, Portland Chamber of Commerce, City Club of Portland, Oregon State Chamber of Commerce, Presidents' Council of Portland's Business and Civic Clubs, and the Oregon Editorial Association. There was a great deal of discussion of the matter within these clubs, the matter often being reported upon by special committee and laid before the club members for discussion.

The only organizations opposing the development are the Trails Club, who stated that their position was from an æsthetic standpoint only, and from the Mazamas. The Mazamas, the largest outing club of Portland, had the matter investigated by special committee which recommended that the Mazamas not protest against the approval of the cableway application. The Mazama council, however, which is a governing body, and without taking a vote of the organization, reported against the cableway. The Advertising Club of Portland also expressed itself as favorable to some type of transportation that would make the summit of Mount Hood accessible to a greater number of people. The East Side Business Men's Club of Portland, which has always been a very active organization of business men, separate from the Portland Chamber of Commerce, also indorsed the cableway. The Social Workers of Oregon supported the Forest Service in opposing the cableway.

On April 15, 1927, Colonel Greeley held a meeting called by the Portland Chamber of Commerce to get the views of the community. The chamber of commerce report of this meeting is as follows:

MEETING OF REPRESENTATIVES OF VARIOUS CIVIC CLUBS AND OTHER ORGANIZATIONS CALLED TO PRESENT THEIR VIEWS ON THE PROPOSED TRAMWAY TO TOP OF MOUNT HOOD

Meeting was held in room 701, Oregon Building, at 1.30 p. m., April 15, 1927.

Present the following: Frank L. Shull, chairman; Col. W. B. Greeley; H. M. Covey, chairman of the outdoor recreation committee of the chamber of commerce; T. H. Sherrard, C. M. Granger, C. J. Buck, and Philip H. Dater, of the Forest Service, Portland; Ben G. Fleischner, Gyro Club; John R. Annala, Crag Rats, Hood River; Harold Hershner and Kent Shoemaker, of the American Legion Climb Committee, Hood River; J. O. Hannum, guide; Hugh G. Ball and R. E. Scott, chamber of commerce, Hood River; E. S. Collins, H. J. Langille, Laurence Barber, C. F. Young, Progressive Business Men's Club; B. F. Boynton, Presidents' Council; W. D. B. Dodson, general manager chamber of commerce; E. J. Jaeger, outdoor recreation committee; O. W. T. Muellhaupt, L. L. Tyler, Cascade Development Co.; A. H. T. Williams, Oregon Technical Council; Martin J. Derogisch and George L. Mickel, Trails Club of Oregon; Charles R. Spackman, jr., Gyro Club; Irving E. Vining, president Oregon State Chamber of Commerce; W. G. Ide, manager Oregon State Chamber of Commerce; E. Sneed, L. M. Lepper, East Side Business Men's Club; William M. Wilder, Alden B. Mills, City Club; Louis W. Waldorf, Mazama; Frank M. Redman, ex-president Mazamas; John D. Guthrie, Forest Service; Frank W. Beach, secretary Oregon State Hotel Men's Association; Percy Smith, Oregon State Hotel Men's Association; John N. Teal, Richard W. Montague, Autin M. Clundull, George S. Todd, Social Workers' Association; A. D. Platt, Mazamas; Charles G. Van Duyn, Oregon State Hotel Men's Association; A. E. Holcombe, secretary Greeters of Oregon; Jamieson Parker, Mazamas; John A. Lee, G. E. Walker, John D. Scott, Portland Electric Power Co.; Grover W. Hillman, director Oregon State Motor Association; Joe Dunne, president Oregon State Motor Association; Fred W. Stadter, Mazamas; Frank Reusswig, director American Association of Engineers; M. B. Mack, East Side Business Men's Club; Charles Coopey; T. W. Zimmerman, executive secretary Pacific Northwest Real Estate Association; F. C. McGowan, executive secretary Automobile Dealers' Association; J. H. Crittenden, president Automobile Dealers' Association; Horace Mecklem, school board; William G. Holford, City Club; Dorsey B. Smith, Journal Travel Bureau; L. R. Wheeler, Cloud Cap Inn committee; E. B. MacNaughton, James T. Wyatt, of the Portland News; Robt. Withrow, of the Portland Telegram; Sam Radon, jr., of the Oregon Journal; Herbert Cuthbert.

Mr. Shull explained that the meeting had been called to hear Colonel Greeley and to give him such information as would help him in coming to a decision re the proposed cable line to Mount Hood. He stated that the matter had come before the chamber of commerce through request for approval of the plan to build this railway to the

top of Mount Hood; that the matter had been referred to the outdoor recreation committee of the chamber of commerce, and that this committee had approved the plan. It had then come before the board of directors of the chamber of commerce, who had also approved it. He further stated that the meeting was not a meeting of the chamber of commerce, but one to permit the people to meet Colonel Greeley and give him such information as he may ask for. He then called on Colonel Greeley to speak.

Colonel GREELEY. I am not going to appear before you as an advocate. I have come to this meeting with just as much of an open mind as is possible in a New Englander of Scottish ancestry. I do, however, want to give you very briefly the background that I think we should all have in our minds in approaching this specific question of Mount Hood, whatever our individual viewpoints may be. That background, in a word, is one of how we should plan the use of these public resources with a view not only to the things we may do with them to-day or to-morrow but with the thought in mind of what we want these mountain areas to be 25 or 50 years hence.

I have been serving the national forests for some 22 years and I have seen the administration of the national forests unfold one necessity after another, requiring careful planning and a great deal of foresight. We started in on the national forests a number of years ago thinking that the main job was to protect timber. We found that we had a large grazing problem that must be fitted into the picture, that we must plan for the use of ranges. We also found that we had a large problem or resource in the form of wild life; that we could simply leave the deer and elk and moose to themselves to sink or swim as conditions might determine, but that the wild-life resource of the national forests was something demanding some sort of careful study and intelligent planning for perpetuation; as the timber and water of the national forests require.

We also found in a few years growing insistently on our hands this problem of outdoor recreation, the motorized type of outdoor recreation, requiring summer homes, resorts, camp grounds, filling stations, places where people could get food—everything that goes with the motorized type of recreation. As that use of the forests has grown it has become one of the most important things we have to provide for and plan for.

Within the last few years the idea has become more and more prominent in the minds of a great many people that along with the timber areas, the grazing areas, the water-power development, and motorized sections of the country where people can go in vast numbers, that we should have some wilderness spot preserved in the national forests, some areas kept for the type of recreation that wants to get off the beaten trail, that wants unspoiled mountains, and we have had—from force of public opinion—to give more and more attention to those possibilities. We had to, from sheer force of public opinion, but I don't mean to imply that I or any other member of the service was reluctant to do that thing, because we believe in that.

To-day we believe, while we are planning for the development of national forests along commercial lines, that we should plan with equal skill and foresight—so far as we possess them—for these social and spiritual services, through the preservation of certain of their areas as unspoiled country. That is my general starting point.

We have realized all these things in the past. The older men here will appreciate how far this western country of ours has changed in the last 25 years. Going back 25 years ago when I was younger on one of the national forests in California and comparing conditions with those of to-day the change has been staggering. We see that the wilderness has passed. We see that the frontier has ceased to exist—the highway, inn, and motor has invaded our mountain fastnesses at a terrific pace. We see all that in the last 25 years. Let us look ahead 25 years. What will the picture be then? Extend that vision for 25 years further ahead. There is going to be no wilderness left unless we plan to keep some of it. That is my starting point.

We have to expect that the economic resources of these western mountain ranges are going to be more and more utilized; timber operations will reach back up the valleys, immense areas in Oregon that are to-day virgin forests will pass through stages of cut-over land, second growth, reforestation; streams will be more and more impounded for water power, urban requirements. The mineral

resources will be more widely developed; basic economic resources will pass into use. We don't want to stop it. But just the same where we can draw lines without impeding the genuine economic growth of Oregon or California in the use of these mountain areas, when we are dealing with recreation and have a choice between different types of recreation, we can, if we will, protect some of the wilderness country of this State, just as we can preserve the elk herds in the national forests around Yellowstone Park or the Roosevelt elk in the Olympic Mountains. We won't do it, however, unless we plan definitely and conscientiously for it.

I didn't realize these things a few years ago. I had the opinion then that was common all over the West. We have so many mountains, so many streams, they are inexhaustible, we will never see the last of our wilderness; but we know now we will see the last of our wilderness. The inexhaustibility of the wilderness of the West is a myth, and in many ways the necessity for keeping some of our country unspoiled, without the motorized type of recreation, without the mechanical means of entrance, keeping it in a condition that will preserve some of the old frontier modes of life, the necessity for that I think is becoming more and more apparent.

One of my jobs is to serve on the coordinating committee which deals with the boundaries of national parks where national forests are involved. A few years ago we had the task of examining the proposed extension of Yellowstone National Park which was proposed in 1918. It was to take in the whole head of Yellowstone River, which is to-day in exactly the same condition it was when it was discovered. It has been a game preserve and elk and moose are probably just as numerous there as 50 years ago. When the extension was proposed in 1918 and the map outlining the extension drafted the most conspicuous thing that we had on it was a motor highway running up the Yellowstone River.

Six years later when Mr. Mather and the rest of us went through the same country we all agreed that that head of Yellowstone River with its magnificent game resources should be kept as a wilderness area, and we all agreed that in putting that area into a national park there should go right into the law a proposition against the building of any roads or hotels in that portion of the park.

I am just trying to picture to you the viewpoint on these whole questions as it has grown up in my own mind. I am not prepared to say it would be impertinent for me to say that Mount Hood should go for all time without any more roads or mechanical means for reaching the summit, as is proposed in this cableway, but I do say let us stop and consider if whether or not Mount Hood as it stands to-day is not going to be of greater value to the State of Oregon and the people of Portland, as an unspoiled peak, than it would be as something more or less approaching another Coney Island. But let us stop, look, and listen.

I have seen the finest thing in New England spoiled by this sort of thing. That is Mount Washington. The White Mountains have lost more by building a road up Mount Washington, with all the accompaniments that go with it—have lost more in the destruction of natural beauty—than they have gained. I won't say offhand that the same will result in the case of Mount Hood. But I do feel we have two propositions here.

The first necessity is to preserve some areas in a wilderness condition for the types of recreation that only such areas can afford. The second, if we should pick certain mountains for this type of development, whether we shouldn't pick some other mountain than one that stands out in history for scenic grandeur and for the sentimental regard of the State.

I know what has been done in Switzerland, and I am not prepared to say that some of our mountains shouldn't be reached in the same way. Perhaps Mount Hood should be, but I hesitate to approve of it for a mountain that was the inspiration of the pioneers. You may call this sentiment; I don't care. It seems to me there is an element there that will make us stop, look, and listen, and be cautious. I would like to get the reaction of the people here to some of these ideas.

Mr. Shull then expressed the appreciation of the people of Portland and Oregon for Colonel Greeley's visit, stating that the people appreciated what the Forest Service had done in preserving these natural scenes of our State. Mr. Dodson was then called upon to express the attitude of the chamber of commerce on this proposal.

Mr. Dodson stated that the chamber had approved the plan on the following grounds: It was represented to the chamber that the

parties interested were competent to carry the work out. Secondly, the chamber of commerce considered the doctrine of the larger use of the mountain. It had the idea that a mountain situated so close to a large city would be an inspiration to a large number of people if they could ascend it, and that a mountain close to a city would be best situated for this kind of development. He stated that at present only a limited number of people can ascend the mountain, but with a mechanical contrivance a multitude could go up. The chamber also felt that the benefit would be magnified according to the number of people who would be able to ascend the mountain. He further stated that Oregon is blessed or cursed with a superabundance of this untouched wilderness, and that the State naturally clamors for more development, and that the chamber had felt that this was an opportune time to get this particular kind of development.

The following representatives then spoke briefly:

B. F. Boynton, representing the presidents' council—which is composed of all the civic and luncheon clubs of the city—that the council had passed a resolution favoring the tramway.

R. E. Scott, president Hood River Chamber of Commerce: Our chamber of commerce did not give an opinion quickly, but finally approved the matter.

H. G. Ball, editor Hood River News: The people will not climb the mountain. They get to the top of Cooper Spur and stop. This is the view of the men of our county, old and young, the men who pioneered Mount Hood. I am in favor of the tramway.

Kent Shoemaker, American Legion, of Hood River: Our efforts have been to get people to the top of the mountain, but many people are unwilling to make the strenuous effort. We were instructed last night to voice the sentiment in favor of the proposed tramway.

John Annala, Hood River Crag Rats: We have had no meeting. However, the consensus of opinion in our organization was not to oppose the tramway.

Irving E. Vining, president State chamber of commerce: Only interviewed the organizations in the southern part of the State, but the sentiment that seemed to prevail was the greatest good for the greatest number. Southern Oregon sentiment, as far as I could test it out, was in favor of the project.

Percy Smith, Oregon State Hotel Men's Association: We believe that when this franchise is granted you will so hedge it with restrictions that the mountain will not become a dumping ground and an eyesore. In favor of this proposal.

Joseph Dunne, president Oregon State Motor Association: We serve the motorists throughout the country. Served 40,000 motorists in our Portland office alone. The first question visitors ask is, Is there any way to get to the top of that mountain? We hope you will make that mountain accessible.

L. M. Lepper, East Side Business Men's Club: I have interviewed many people; they say that the average man of over 45 doesn't want to climb the mountain, and he doesn't climb it. Probably not more than 2,000 people climb the mountain in a year. You are shutting out the average prosperous man who comes to this State who doesn't want to climb the mountain, but who would go upon a tramway.

O. W. T. Muellhaupt, a world traveler: If you allow this mountain so close to Portland to be made accessible to the people who live in Portland and Oregon, you will have done more toward bringing the moral standard higher through a communion with nature than anything else that could be done.

W. M. Wilder opposed it.

Dr. Calvin S. White, of the State Medical Society: I think that place ought to stand forever as it is. Let the people climb to the top.

Mr. T. W. Zimmerman, secretary Pacific Northwest Real Estate Association. Those I have come in contact with are thoroughly in sympathy with the proposed aerial tramway.

Horace Mecklem, school board: To my mind to make Mount Hood a commercial asset would be the greatest mistake that could be made in Portland or Oregon.

E. B. MacNaughton against proposal.

F. C. McGowan, executive secretary Portland Realty Board: Resolution passed at our meeting favoring the granting of permission for the construction of this aerial tramway.

Richard Montague, of the Mazama Club: I believe in the sentiments expressed by Colonel Greeley.

Joseph N. Teal: I am against this.

Martin Derogisch, president Trails Club of Oregon: Our organization is against this project.

Frank M. Redman, a Mazama: I am opposed to the tramway.

John A. Lee, a Mazama: I am speaking as a citizen and also a member of the Mazama Club and a member of the committee of three who considered this question. I stand with C. H. Schools and Rodney Glisan on this proposition, in favor of it.

J. A. Crittenden, president Automobile Dealers Association: We unanimously voted to favor construction of this tramway.

Ed. Averill: We ought to view this thing reasonably. We can make Mount Hood accessible to the general public without destroying the resources or the natural beauty of the mountain.

Jamieson Parker, a Mazama: I can state that the Mazamas by an overwhelming majority are against this proposal.

Ralph Staehli, secretary Automobile Dealers Association, in favor of this tramway.

H. D. Landgille: Have stood on the top of the mountain, an even one hundred times; am against proposed tramway.

Harold Herschner, mountain climb committee of the American Legion, Hood River: Favor proposed tramway.

A. E. Holcomb, secretary Greeters of Oregon: Adopted resolution in favor of proposed tramway.

Robert Strong: Mountains commercialized in the manner proposed are desecrated mountains.

L. W. Waldorf, Mazama council: The Mazamas oppose this project, not because we don't want others to go up to the top of the mountain, or that we couldn't still climb it—we could—but because we should like to see the tops of the mountains left without all this desecration.

Howard Covey, chairman outdoor recreation committee of the Portland Chamber of Commerce: There ought to be developed for use these great beauty spots of ours. If we can get the most use out of them by leaving them in a wild state, that is the way we should leave them. If we can get the most use out of Mount Hood by

building a cableway to the top, that is the way to develop it. I object to the accusation made by the people who oppose this cableway when they say that those in favor of it are doing so for selfish reasons. Take the Columbia River Highway; the opportunity which was given the multitudes to see the Columbia River Highway is of much greater benefit than the incidental profit that might be made out of it by the State of Oregon through its construction. That is also true of this cableway. Service to the multitudes is so much greater than the money that citizens might get out of it that there is no comparison. This country is going to be developed. I believe I express the sentiment of the chamber of commerce when I say that we are delighted to have Colonel Greeley here in an open-minded condition, such as we find him. He is here to find out what we want to do. We believe that the majority of the people would like to see this cable road to go the top of Mount Hood.

A. H. T. Williams, Oregon Technical Council: There has been very little discussion relative to the masses using this cableway. We look at the financial returns of these things. Will it be possible for the masses to use this tramway? Will the expense of the trip be at such a rate that they can't afford to take it?

Judge Stadter, president Mazamas: Against proposal.

A. M. Churchill: There has been one-sided salesmanship on this publicity. Absolutely against it.

Frank L. Shull: My own standpoint would be this: Personally I should like not to see any conveyance to the top for the simple reason that the mountain to me means a great deal. I have climbed it. After reaching the top I don't get so much out of it. I feel that if I went there in some other way it wouldn't mean so much to me. That is my own individual opinion. The chamber of commerce voted in favor of it. I voted with the board when it was considered, but personally I should not like to see it.

Amedee Smith: Against proposal.

Allen Bonham: Let us go slowly. I am against it.

A. D. Platt: Many people surrendered to the booster complex, especially in the City Club when they voted for this proposal. I am against it.

L. M. Lepper, East Side Business Men's Club: I have attended two meetings where discussion on this subject took place. Action both times taken in favor of the proposed railway. There was no outside influence at our meeting. This was not railroaded through. Our club is in favor of it.

Scott, editor Mazama Magazine: Opposed.

SUMMARY OF ORGANIZATIONS SUPPORTING AND OPPOSING THE APPLICATION FOR A PERMIT

Supporting: President's Council, Portland Chamber of Commerce, Hood River Chamber of Commerce, Hood River News, American Legion of Hood River, Crag Rats of Hood River, State Chamber of Commerce, Oregon State Hotel Men's Association, Oregon State Motor Association, East Side Business Men's Club, Pacific Northwest Real Estate Association, Portland Realty Board, Portland

Automobile Dealers' Association, Greeters of Oregon, Mountain Climb Committee of the American Legion, Hood River.

Opposing: Mazamas, Trails Club of Oregon, Oregon Technical Council.

Individuals supporting: O. W. T. Muellhaupt, John A. Lee, Ed. Averill, Howard Covey, Ralph Staehli.

Individuals opposing: W. M. Wilder, Dr. Calvin White, Horace Mecklem, E. D. McNaughton, Joseph N. Teal, Frank M. Redman, Jamieson Parker, H. D. Langille, L. W. Waldorf, Judge Fred W. Stadter, A. M. Churchill, Amedee Smith, Allen Bonham, A. D. Platt, Mr. Scott.

Meeting adjourned. Herbert Cuthbert, secretary.

The following statement of John A. Lee is one of the more able and thoughtful presentations of this matter by an out-of-doors lover and mountain climber:

AUGUST 5, 1927.

Col. W. B. GREELEY,
Chief Forester, United States Forest Service,
Washington, D. C.

MY DEAR COLONEL GREELEY: Ever since the hearing held here before you in the matter of the proposed Mount Hood tram I have had the impulse to set out in writing and at some length my views on that matter, as it was not possible then to do more than touch the high spots of the subject in the brief time allotted to each speaker. Accordingly, I have written an argument on the subject in the form of a letter addressed to the officers of the local presidents' council, a copy of which I inclose herewith and which also, or a part of it at least, will appear on page 1 of section 5 of this coming Sunday's Oregonian.

I have had a double purpose in writing this letter. Whether my position as regards the tram be right or wrong, I have felt that I owe it to myself as well as to any who might, even though in slight degree, be influenced by my judgment in matters of this kind, to set out somewhat fully the arguments that have led me to take such position. My other purpose and one that I have very much at heart is to take advantage of the present interest in the tram and seek to arouse the public to a realization of the necessity of there being adopted a definite policy of scenic conservation.

I am thoroughly convinced that the north side, at least, of Mount Hood and doubtless the south side also must be given up to the enjoyment of the masses, just as are Crater Lake and Paradise Valley on Mount Rainier, even though Mount Hood shall not be made a national park and shall continue to be administered by the Forest Service. I am equally convinced that there will be little left in Oregon and Washington to the true nature lover, wild as some sections in these two States still are, unless some definite plan for scenic conservation be adopted. I sometimes wonder if, on the whole, a mistake has not been made in building the Skyline Highway along the summit of the Cascades. But here again, I should say, a definite commitment has been made that can not now be receded from.

We can not, of course, entirely call a halt to the building of roads, either inside or outside our national parks, but both inside and outside these parks there should be left considerable areas untouched by roads. In other words, we should have our scenic areas for the great throng who will stick close to automobile thoroughfares and our other areas for the more limited number who delight in the primitive wild.

There are two phases of the subject that I scarcely touched upon in my article, long as it is, and these I omitted both because of the length of the article and because I did not deem it well to raise too many controversial questions at one time. Both of these points Mr. Eaton gave a little space to in his article in Out-door America. One is the point of taking portions of our national forest and making definite wild reservations of them, to be improved in no way except only by the building of trails. The other has to do with housing and sanitary conditions in order properly to handle the throngs now visiting the rim of Crater Lake and soon, as I believe, to visit the north and likely also the south side of Mount Hood. When the throngs begin to go to the north side of Mount Hood there is almost certainly going to be the same cramped situation there as regards handling the campers as now exists on the rim of Crater Lake.

With regard to the south side of Mount Hood, I note that the Mazamas have appointed a committee, consisting of Mr. E. S. Collins, Mr. Arthur Churchill, and myself, to take up with the proper parties the matter of a road from Government Camp to Camp Blossom.

I am mailing to Mr. Granger, the district forester, and to Mr. Sherrard, supervisor of the Mount Hood Forest, a copy of my article and of this letter to you.

Yours very truly,

JOHN A. LEE.

JULY 25, 1927.

Subject: Mount Hood tram and cableway in its relation to scenic conservation.

B. F. BOYNTON,

FRED W. GERMAN,

*President, and Secretary, Presidents' Council,
Portland, Oreg.*

GENTLEMEN: I have read with interest your recent letter to the 22 member clubs represented in the Presidents' Council, inviting them to appeal to the Secretary of Agriculture from the adverse decision of Colonel Greeley, Chief Forester, on the proposed Mount Hood tram and cableway.

I have been an advocate of this project, first as a member of a Mazama committee reporting favorably thereon, though the committee's report failed of adoption by the Mazama Council, and later at the public hearing called at the instance of Colonel Greeley. I still favor the project and support the proposal to appeal from Colonel Greeley's decision. However, I arrive at my conclusion through a somewhat different course of reasoning from that used in the argument of your letter. One of the major premises upon which you appear to rely is, in my humble opinion, not well founded in fact, and it is always a bit dangerous to attempt to support a conclusion, however sound it may be, on premises not sufficiently established. A weak premise will not alone weaken the force of a sound conclusion, but may go so far as to furnish the arbiter to whom the question argued be submitted an excuse at least for a decision contrary to the real merits of the cause.

Alluding to the fact, and it is a fact, that Colonel Greeley rendered his decision out of considerations of sentiment, and appearing to concede that it is proper that some at least of our wild and scenic places should be left in their primitive state for the joy of enthusiastic nature lovers, you use this sentence, among others, to the same general effect: "Hundreds of square miles of marvelous mountain scenery may be found in the mountain ranges so far away from developed highways that it is questionable whether they will ever be opened for general public transportation." It is with the premise expressed in this sentence that I take issue. I would concede the premise except for the automobile, but with the automobile a factor in the situation its truth is much to be doubted. And not only do I feel that to lay down a premise thus open to attack weakens your argument for the tram, but it will tend to retard the awakening of the public mind to the realization that it is high time, as Colonel Greeley contends and I believe rightly, that steps should be taken now before it is too late to preserve some of these wild places in their natural state.

It is a matter of common knowledge that numerous as are our streams and efficient as may be our fish and game board in the way of artificial replenishment of the finny inhabitants of these streams, it is fast coming to be a difficult matter, except perhaps for a brief period right after the season opens, to go out even into the remoter sections and catch a mess of trout. Roads and the automobile have brought about this condition.

The Roosevelt Highway will soon have opened up the whole ocean front, from Astoria to the California line. It will not be many years before the Skyline Highway, building along the summit of the Cascade Range from Mount Hood to Crater Lake, will have been completed. Numerous branch roads already lead off from these two main arteries and many more of such spurs have been projected, to follow, for the most part naturally, the courses of the streams. With these arteries and all projected spurs completed, the coast and Cascade Mountains as an untamed wild will cease to be.

I would not decry this development in the main, much as it jars upon my personal sensibilities to realize that soon I will no longer be able to take a pack upon my back and journey into wilds where I find no footprints of man before me as I approach a stream to fish and where no axe mark may be found on shrub or tree. I recognize that this development must inevitably come as a part of the subjugation of the great West. I recognize, too, that if Oregon is

to make the most of her great tourist asset, our scenic regions must be rendered reasonably accessible to the tourist, most of whom will be content to travel only by automobile and not on horseback or on foot.

But to accomplish this a road need not be built along every stream. The roads will follow soon enough when the demands of commerce shall make it necessary to remove the timber covering, if indeed it shall come about, as let us hope it will not, that none of these forested areas shall be left untouched. Neither will it be necessary to have roads penetrate to every mountain park or lead high up on the slopes of all our snow-capped peaks. Trails will suffice in many places, and in these places will, in the truest sense, best serve the tourist, as well as the ardent nature lover. If road development be carried to the extent deprecated above there will be defeated rather than subserved the purpose sought to be accomplished. With the throngs tramping over and camping in these flower-carpeted parks and meadows their beauty would soon be gone. They would shortly cease to be attractive to anyone. I trust I am not so selfish as not to wish to have all our people who might feel inclined to visit all our wild and scenic places, if in doing so these places might still continue to be wild. But this in the nature of things can not be. In short, in the development of our scenic resources I would apply the principles of conservation just as they have been applied to our resources of timber and water power.

For sake of illustration let us refer to a few concrete cases. I would have constructed the proposed Lolo Pass Road around the west side of Mount Hood. This, in conjunction with the present Loop Road, would form a highway completely encircling the mountain at its base and as a scenic asset would be unique. Such an encircling highway is projected, indeed building, at Mount Rainier, but it will require millions and a good many years to construct, whereas the Lolo Pass interval in the Mount Hood circuit would entail only 12 miles of new road construction and could be completed in a single season. For a more complete consideration of the Lolo Pass Road I would invite your attention to the recent communication to the Portland Chamber of Commerce by the Mazama committee appointed to consider this project, of which committee I am chairman.

It might also be fitting to have constructed an auto road from Government Camp to the timber line at Camp Blossom and establish there a regular auto camp, where the forest growth is attractive but the floral covering negligible.

But I would not extend spur roads from the encircling highway either to Paradise Park, Yokum Park (Yokum Ridge), or Eden Park, on the westerly slopes of the mountain, all of which are as yet gems of pristine loveliness. Elk Meadows on the easterly slope of the mountain might also well be included in this category. Let these places be reached by trails alone. Neither, according to my view, should the Skyline Road building along the summit of Cascades lead down into Jefferson Park at Mount Jefferson, though the road must of necessity approach near to this park. Let also Bird Creek Meadows, on Mount Adams, be made accessible by no other means than by trail. The illustrations could be multiplied but these will suffice.

Now, with regard to the north side of Mount Hood and the proposed tram and cableway to the summit of the mountain. I firmly believe that Colonel Greeley has made a mistake in denying a permit for this construction, unless it should be that his denial is still only tentative and his purpose to learn whether or not the people of Oregon are really heart and soul behind the project.

I think I have already made clear the one great basic principle that leads me to favor this development, which, expressed in a sentence, is this: Let all who care to, enjoy all our scenic attractions and enjoy them to the fullest extent possible, if in enjoying they do not also destroy. I am thoroughly convinced that through the medium of this tram and cableway a larger number, a very much larger number, will be enabled to enjoy this noble peak than can now possibly do so, and I can not feel that through such a means of transportation the mountain as an object of enjoyment will be destroyed or seriously impaired. I would lay down and here apply this principle as expressing no more than common right and justice, the right of a democratic people. The mountain belongs to no particular club or class but to all the people and all have a right to its full enjoyment, subject only to observance of sound principles of conservation.

I would not either be frightened from adherence to this principle and from the advocacy of this project by the cry of commercialism, the cry that the tram will be a means of money profit to its builders and that its advocates are placing emphasis upon the commercial returns that will accrue to the State. It would be my wish that those who risk their capital in the venture should reap an adequate return, for otherwise the tram could not be maintained, and the State is certainly

justified in exploiting all its legitimate resources, its scenic resources along with the rest.

Also, I can not feel that in favoring the project I am out of harmony with the best interests of the Mazama Club, an organization that in the past has honored me with its presidency and of which I have long been a member, even though in so doing I am at variance with some of my best friends within the organization and with the governing body of the club. As our committee pointed out in its report to the club, the Mazamas owe it to themselves to consider public questions first from the standpoint of the general public interest and secondly from that of their own special purposes, needs, or desires. And as to this latter, I think I know the spirit that imbued the founders of the organization, one of the foremost of whom, and for five terms president of the club, the venerable C. H. Sholes, strongly indorsed the tram in a letter printed in the Oregonian of January 20 of this year.

The Mazamas, it is true, are a mountain climbing club, organized on the summit of this very mountain, and they are and always have been, conservationists. But it has likewise been their mission from the first, along with kindred organizations, to preach the gospel of the out-of-doors; to explore and make known our places of scenic charm, to lure into the open as many as would come and cause them to taste of the joys of stream and forest, of alpen park and mountain top. In this pioneering they have done a noble work and one the public should ever feel grateful to them for.

But now with half of our population on wheels and with the thousands searching out and penetrating to every remote nook and cranny of the public domain to which their Rolls-Royces and "Tin Lizzies" will take them, the Mazamas and their sister outing clubs have become alarmed. They have felt less need to awaken interest in the open and much more the urge to place emphasis upon conservation. Some of the more pronounced conservationists among them have felt constrained to block if they can, every movement for opening up new scenic places to the masses or to develop further those already made accessible. This radicalism, I feel, is mistaken and will fail of its purpose as it should. It is better to stay with a fast and powerfully moving craft and seek to direct its course by getting at least an occasional hand upon the wheel, than to jump overboard and try to stop its onrush by putting a shoulder against the bow. The result of such misdirected effort will, of course, be inevitable. The mighty craft, driven forward by the throbbing engines of public demand, will sweep over the one who would thus essay to stop its progress and continue on its way.

The construction of the tram will make it necessary for the Mazamas to change slightly the wording of their qualification for membership so as to make the test the ascent on foot to the top of a major peak, regardless of whether or not the summit may be reached by other means. This can be done without affecting the character of the organization and should be done in any event, as our committee pointed out in its report. I look for the time, and that not far distant, when airplanes will be landing on the summits of such broad topped mountains as Baker, Adams, and St. Helens, though likely never on Mount Hood.

And now in my argument for the tram I am brought to announce another general principle, corollary to the basic principle stated above, and this I would substitute as a premise in the argument for the one of yours with which I have taken issue. The principle is this: In nearly all our scenic States there are a few, in some States not more than one or two, scenic objects of unique or otherwise outstanding character, and these especially where readily accessible, should be set apart for the enjoyment of the masses and to this end developed in every reasonable way. Some of these places, though not all, have been made national parks. Washington has Rainier. California has Yosemite and some others. Oregon has Crater Lake. Mount Hood, the north and south sides of this mountain is logically, and, as I firmly believe, must be recognized as being also in this class. This fact, the fact there is a special reason why Mount Hood should be singled out for development, those favoring the tram will, in my judgment, do well to stress rather than to argue there will always be plenty of other attractive places left for enthusiastic nature lovers.

That Mount Hood is to be a resort for the many is determined by its being the highest mountain peak in Oregon and one of the most fascinating in the whole range, by its conspicuous position, by its accessibility and by the development that has already taken place or is virtually assured. The loop highway has been constructed. The Lolo Pass interval in the complete circuit will come, as the city of Portland has finally announced that it will no longer stand in the way. The spur road to Cloud Cap Inn, a broad thoroughfare on easy grade, has just

been completed at great cost. The construction of a spacious hotel at the upper terminus of this road has been projected and as soon as financed will be built. All of this extensive development has received the sanction of and been encouraged by the Forest Service and in part been financed by it. In short, whatever may be the final decision as to the tram, the Forest Service has already definitely committed itself to the policy of making Mount Hood, the north side at least, a playground for the masses, as was pointed out to Colonel Greeley at the public hearing, hence as to that side of Mount Hood his argument that some of our wild places should not be approached with mechanical means of transportation can have no application.

The tram to my mind would be no more than a logical step in the development already completed or under way. It would provide a means for the average tourist and many of our own people to reach the summit of the mountain, a privilege that without the tram they would never enjoy. Some by reason of age or infirmity could not. Most of the others would not. Some because they would not be equipped to climb. Many simply because they would not want to climb—on account of the hazard or exertion involved or for no special reason. It is well enough to argue that except as to the aged or infirm all these people should be made to climb if they would deem it worth while to attain the summit, but this argument is beside the issue. In deciding this question, a public one, the public must be taken as we find it, not as the mountain climbing enthusiast might wish to have it. It follows then if all who might desire, are to reach the summit of the mountain some mechanical means must be provided for them. The promoters of the hotel are naturally much interested in the tram as it doubtless would assist materially in enabling the hotel to be maintained. So also should the hotel be of aid to the tram.

The ascent of the mountain through the means thus provided will be the great attraction at Mount Hood, and it should be a very great attraction. We will assume the tourist has already been to Crater Lake and has had the thrill felt by every visitor as he steps to the rim of the crater and gazes down into that stupendous and indescribable bowl of blue. He now has an experience vastly different but no less impressive. Without exertion and in comfort he is lifted to an elevation more than 2 miles above the sea and looks out upon a panorama such as likely he has never seen before and perhaps may never see again. Oregon will have been doubly and indelibly stamped upon his memory.

By his ascent and the view from Cloud Cap Inn the tourist will have been impressed with the grandeur and sublimity of the mountain. Should a storm break or should he spend a night upon the summit, as it is contemplated that he may do, he will have seen it in its sterner and more aweinspiring aspect. But there is a gentler side of the mountain's charm that the visitor at Cloud Cap Inn may come to know and this privilege some will not want to forego. Let him, on horseback or on foot, as he may choose, take the trail and spend a day on a trip to Elk Cove and Eden Park to the west, or to Elk Meadows to the east. Here in these flowery dells he may recline and dream and breathe into his soul that ineffable sense of peace with God and all mankind that to my mind can be felt in like degree only amid such surroundings.

With her highest mountain thus developed and equipped to receive the masses, with her Crater Lake, her Columbia, Roosevelt, and Skyline Highways—and the various scenic highways in the central and eastern parts of the State—Oregon as a tourist mecca undoubtedly will have come into her own. It will be a crop that she can continue to harvest through the generations yet to come if, as to the bordering areas of these highways, she shall learn and practice true principles of scenic conservation. I have indicated to some extent above my own ideas of such conservation. I would, however, commend for your careful reading—and that of the people of Oregon generally—a thoroughly sane and well considered article, the leading article it is, in the June number of *Outdoor America*, entitled "A Paradox in Conservation." *Outdoor America* is the official organ of the Izaak Walton League of America and the writer of the article is the well known author, Walter Prichard Eaton.

Even though Mount Hood is to be made a playground for the masses, it does not follow, nor is it necessary to be desired, that it shall be made a national park. There would be many obstacles in the way of this, needless here to be discussed, and so great are these that it is doubtful if a movement to this end would receive favorable consideration by the National Park Service. This area may as well continue to be administered by the Forest Service, which has a special recreation department and more and more is giving attention to the recreation side of its service. Already is the Forest Service having to work out many problems of

administration in connection with the various recreation centers near Mount Hood; at Rhododendron—and various other points on the Loop Highway—and in granting a concession for the tram or other concessions on the mountain it can well be trusted to see to it that rules of cleanliness and sanitation shall be observed and that nothing shall be done out of keeping with the dignity of the mountain. The “Hot dog” and “tin-can” cry, is not in this case a bit of play to the galleries, at least strikes me, in the light of the evidence, as being hardly fair to the administration of the Mount Hood Forest. The camp at Eagle Creek, frequented by numbers, is in and administered by the Mount Hood Forest and it has been my observation that throughout the 10 years or more this camp has been maintained it has been a model of cleanliness.

In my argument for the tram I have yet to consider one of the leading points of objection by its opponents, probably the principal objection, for it is the one most stressed. The objection is one of sentiment, but it is even more than that, for there has been interjected into it the religious element. Mount Hood, they say, is a shrine and it should not be profaned by placing upon it any man-made thing, or at least this monumental pile should not be desecrated by assuming to reach its summit through the means of any mechanical device. Colonel Greeley—though I do not recall that he used the term “shrine”—in effect adopted the idea and sought to drive his argument home by one striking allusion that he made in his talk at the hearing. He stated, in substance, that he felt great reluctance to have the mountain treated as proposed when he reflected that from the time the Oregon pioneers crossed the Blue Mountains on their toilsome journey westward this sublime peak was their guide, ever beckoning them onward.

I will confess that this allusion touched a tender spot with me, for both my father and mother were of these pioneers—my mother in 1850 passing to the south of the mountain over the Barlow Road and my father in 1852 passing to the north down the Columbia River. But let us suppose that in those by-gone years the construction now contemplated had already been installed. What part of it would these pioneers have seen as they gazed upward at the mountain. Absolutely no part, unless indeed they had been possessed of telescopes of the power common to this generation. The mountain would have presented to their vision its same unsullied whiteness and it would have afforded them the same inspiration that it then did and has since to the countless numbers who have traversed these respective routes.

The argument then resolves itself into an objection to the idea of there being placed upon the mountain such a mechanical device, to the mere thought of its being there, rather than that it will amount to any noticeable defacement. Let us apply the scalpel of analysis to this idea. If Mount Hood indeed be a shrine for worship let us conduct our worship at its base and not desecrate the shrine by presuming even to set foot upon it. The Indian had caught this same idea of veneration but he was consistent in it. He thought that the great spirit dwelt upon the crest of all our snow-capped peaks and he could not be induced to invade this holy realm, as witness the experience with their Indian guide recounted by Van Trump and Gen. Hazard Stevens, who made the first recorded ascent of Mount Rainier.

But what do we do with this, our sacred shrine? For our pleasure and enjoyment we conduct many expeditions to its summit and tramp all over its slopes with our hob-nailed boots. For our comfort and safety in making the ascent we let down from its top great hempen ropes, with which we pull ourselves up hand over hand. We permit this shrine to be invaded by the god of mammon by allowing professional guides to ply their trade upon it, for whose services we pay a money price. We have even suffered its crest to be desecrated by erecting thereon a human habitation and have placed it there for a commercial purpose, in that the dwellers in this abode are there to aid in preventing fires from consuming merchantable timber though incidentally this prevention also preserves our forests for use in the way of recreation. What then remains of the argument that a new and more effective device for climbing the mountain, one that will enable the many and in safety to reach the summit, amounts to profanation. In my opinion, nothing.

It is my view that the beneficent Creator intended that all the material things of this earth should be for the use of his animate creatures. And I believe that it will be in entire harmony with His will that the many rather than the few shall be enabled to stand upon the summit of this, one of the noblest of His creations. Standing there and drinking in the beauty and magnificance of the scene as it unfolds itself before them, they will indeed be lacking in religious feeling if they do not consciously sense the goodness of God and offer up thanks that he has

permitted them such an experience. In that sense the mountain truly will have become a shrine, the mecca to which the faithful will flock from far and near.

The south side of Rainier by its development has been made a resort for the masses and the people are going there in increasing numbers, though the lover of the primitive in nature has been driven to seek more quiet retreats on the mountain, which fortunately are many. If it were feasible as an engineering problem, I see no good reason—unless it be the physiological one due to the great height—why a mechanical lift of some kind should not extend from Paradise Valley to the summit. This may not be feasible, but it undoubtedly is feasible to construct a tram and cableway to the top of Gibraltar Rock, which is more than a thousand feet higher than Mount Hood, and this, I believe, will be done. Thereby there will have been avoided the great hazard from falling ice and rocks in passing under Gibraltar, and to negotiate the remaining distance to the summit will be a simple matter.

Call it heresay to the nature lover's code if you will, nevertheless I should like to see an escalator of some sort, so installed as to be inconspicuous, placed on the rim of Crater Lake, so that elderly and infirm people as well as more sturdy may be enabled to descend to the water's edge, go out upon the lake and get the view looking upward at the rim, which is scarcely less interesting than that from above.

But for fear of being misunderstood, I will repeat, it is only the few places thus specially set apart for the enjoyment of the masses that I would thus develop and these to the end that the masses shall the better be enabled to enjoy them. The remainder of our public domain I would not bar the many from, indeed would make it reasonably accessible with roads and trails, but with the roads at such intervals apart that much wild country will still be left for the pleasure of those who are willing to pay for their enjoyment with a measure of physical exertion.

But the enthusiastic mountain climbers—and among them some of our good Mazama friends—argue that with the building of the tram, Mount Hood, their favorite mountain, will have been lost to them for the enjoyment of their sport. I do not believe that this will follow. Some will doubtless use the tram who might otherwise go up on foot. Others, on the other hand, as a result of their ascent by the tram, will catch the spirit of the mountain game and will want to climb. I think I understand the spirit of the mountain climber. At the risk of being accused of boasting I may say that, in the course of my experience in climbing mountains, I have been on the summit of all the major peaks of Oregon and Washington; Baker, Glacier Peak, Rainier, Adams, and St. Helens, in Washington; Hood, Jefferson, and each of the Three Sisters, in Oregon—some of them a good many times—as well as other high mountains, and have conducted numerous parties to the top of various of these peaks.

Mountain climbing is in truth a sport, just as are football, hockey, rowing, running, and the many other sports where the objective is a goal. While the summit is the goal of the mountain climber, its attainment is only incidental to his enjoyment. His real joy is in the doing of the thing itself, just as it is in the other sports mentioned, in the thrill of accomplishment, in the overcoming of obstacles, in the mastery of the mountain. If left to himself, with no other lives dependent upon him, he will go to the top under the most adverse conditions, even when he knows that due to murky weather there will be no view as his reward. He is ever on the alert to seek out and attempt new, untried, and even dangerous routes to ascent, when a known and perfectly safe way is available to him. The true mountain climber will not cease climbing Mount Hood just because others prefer to be lifted to the top, any more than a marathon runner will cease to run over a given course, when without effort and in a fraction of the time he could travel the same route and distance by automobile.

As is well known, there are numerous similar conveyances in use in the European Alps, and it does not appear that climbing on foot has become less popular there or that the business of the professional guides has fallen off. It is not yet possible to reach the summit of their highest peaks, such as Mont Blanc, the Jungfrau, and the Matterhorn, by this means, likely for the reason that their contour does not lend itself to such construction, or it may be that it is thought not well to transport people so quickly to such extreme heights; but the railway on the Jungfrau goes to a height of 11,480 feet and the cableway to the summit of L'Aiguille du Midi, now building and to be completed next year, will reach an altitude of 12,608 feet, both of which are higher than Mount Hood's 11,225 feet.

There are some much-needed conveniences to the climber as well as to the patrons of the tram that this development will provide. With the number of parties already going up the mountain, proper sanitary conveniences are very much to be desired. Also many of the climbers reach the top in a state of almost complete

exhaustion and in this condition so quickly suffer from chill that better and more commodious housing facilities and more adequate means of obtaining warm drink would prove a boon, though the rangers in the lookout station have been most kind. The hot tea that they have been entirely willing to dispense, even though the fuel with which they brew this tea must needs be transported to the summit on their backs, has restored the circulation and revived the spirits of many a chilled and exhausted climber, and the huskiest Mazama will seldom ever resist the temptation of this proffered hospitality. If a piece of "hot dog" were offered him under these conditions, I should hate to stake my life upon his refusing it.

In concluding I will say that we should have the tram for the reason that it will provide the masses with that which is their right and for the reason also that, to the extent that it shall aid in inducing tourists to route themselves this way, will be of advantage to the people of our State. If it is fitting then that the tram be built, the permit for its building should be granted promptly while those offering to finance it are still in the mood to go ahead. Otherwise, through lack of finances, the consummation of the project may be long delayed.

Respectfully yours,

JOHN A. LEE.

The local sentiment of the communities around Mount Hood is strongly and distinctly predominantly in favor of the cableway.

(e) Effect upon recreational, inspirational, and educational values of (a) realization of timber values: (1) Complete, (2) restricted (by George L. Drake, logging engineer):

1. The mature timber under consideration is of the west coast type requiring heavy power machinery for its removal, due to the rough ground on which it lies and its large size. Selection logging, whereby only the mature trees would be removed, is not practical in this class of timber, and in most of these areas it will be necessary to clear cut. On some of the less rugged ground it may be possible to practice a modified form of selection logging using tractors for motive power. Hence any logging that will take place is bound to leave scars in the forest cover. A brief discussion of the effect of logging the operatable timber on recreational, inspirational, and educational values, follows for each unit.

WEST FORK HOOD RIVER

1. *Complete realization of timber values.*—With the exception of the area around Lost Lake and along the Lost Lake Road, little of the timber in this unit will be used for recreational purposes. Trails from the Columbia River via Herman or Eagle Creeks to Lost Lake, pass through the upper portions of the Lake Branch watershed on which is the largest body of timber on the area being studied. All of the timber is in sight from the top of Mount Hood and Cloud Cap Inn, but the distance is so great, and there is already so much burnt and logged-off land in sight from these points that any further cutting will not greatly detract from the view. Any cutting on the slopes in the vicinity of Lost Lake, that are in view from the lake or lake shore, as on Lost Lake Butte or the Sawtooth Mountains, would detract from the inspirational value of the lake. A portion of this timber is in private ownership.

From an educational standpoint it appears desirable to have areas on which logging has been conducted under Government regulation, so that the public may get a conception of the practical side of forestry. These timbered areas contain no unusual timber types that need preserving and there are larger areas adjacent which it is not practical to log, available for those who desire to study nature in her primitive state.

2. *Restricted realization of timber values.*—Restricted cutting in this unit would involve the leaving of any timber in sight from Lost Lake and the leaving of timbered strips along the Lost Lake Road and the trails from Lost Lake to Wahtum Lake and Eden Park, sufficiently wide to mask any cuttings in the near vicinity of these roads and trails. This plan of cutting would permit the logging of the mature timber on Lake Branch, Divers, and lower Laurel Creeks, a total of some 450,000,000 board feet, of which 170,000,000 is private. Under a restricted policy the cutting of the 150,000,000 eliminated from the present sale, together with timber to the east on the divide between the West and Middle Forks, that is tributary to the Dee mill could be authorized. These areas on which restricted cutting may be done, include the mature timber that is tributary to the Dee mill, and on which it is dependent for its future cut.

MIDDLE FORK HOOD RIVER

1. *Complete realization of timber values.*—The Middle Fork contains no features of recreational or educational interest and its inspirational value consists of the view obtained from the top of the mountain or from Cloud Cap Inn and the road leading to it. The bulk of the mature timber lies north of the Clear Branch and complete and restricted cutting in this watershed would cover much the same area. As Clear Branch lies about 5 miles by air line from Cloud Cap Inn and at a much lower elevation any cutting north of this creek would be in the far background, especially since Red Hill would mask parts of the area.

2. *Restricted realization of timber values.*—Restricted cutting confined to the area west of the Middle Fork and north of Clear Creek would permit the removal of 120,000,000,000 board feet that is tributary to the Dee mill. The effect of this cutting has been already discussed.

EAST FORK HOOD RIVER

1. *Complete realization of timber values.*—The timber in this unit lies on both sides of the Mount Hood Loop Highway, the major part being on the west side of the road. Scattered along the road are public camps and this timber has a high recreational and inspirational value that would be destroyed by the complete realization of the timber values involved.

2. *Restricted realization of timber values.*—Due to the excellent transportation facilities there is a demand for cedar poles from this area, and selective cutting has been done under careful supervision with satisfactory results. The amount of timber that can be removed from this area under selective cutting that will not detract from the recreational value or increase the fire hazard is very limited and is confined mainly to the cedar poles.

HERMAN CREEK

Complete and restricted realization of timber values.—The Herman Creek Trail is one of the routes of entry from the Columbia River Highway to the Mount Hood region, Eagle Creek being the other route. Due to the more attractive scenery up Eagle Creek and the

better camping facilities at the mouth of the creek, Eagle Creek will always be the more popular route. Logging operations on either creek, will add to the fire hazard, as due to the rugged topography and the prevalence of dry east winds in the Columbia Gorge, fires are difficult to control and the presence of logging operations with their resulting slash problem would greatly increase the risk. Fires originating in this region are very costly to suppress and endanger the Bull Run division.

Besides greatly increasing the fire hazard, any logging on Herman Creek would greatly injure its recreational and inspirational value as the building of rail or truck roads up the creek would create an eyesore that the narrowness of the canyon would not permit effective screening of by scenic strips of timber. It is impossible to practice restrictive cutting in these watersheds without greatly injuring their recreational values.

SANDY RIVER

1. *Complete realization of timber values.*—Any cutting in the Clear Fork or Lost Creek branches of the Sandy will be in partial view from the top of Hood or from Eden Park. The proposed road to Hood River Valley via Lolo Pass will go up the Clear Fork, making this stream available for summer-home sites. This unit contains no areas of educational value.

2. *Restricted realization of timber values.*—Within the burnt areas is considerable dead cedar suitable for shingles that can be sold without increasing the fire hazard. The timber on the branches of the Sandy containing glacial waters, as Lost Creek, the main Sandy and Muddy Creek, where recreational values are low, could be sold under careful supervision that would prohibit cutting on areas in sight of the proposed Lolo Pass Road, without injuring the recreational, inspirational, and educational values. Any sales in the unit would be contingent on securing the permission of the city of Portland to have this unit eliminated from the Bull Run division. Due to their fear of fire entering the Bull Run watershed it might be difficult to secure their permission to the elimination.

In our dealings with the Oregon Lumber Co., which have extended over the past 13 years, we have never intimated to them that we might change our present policy of disposing of the mature timber tributary to their holdings.

(b) Use of forage resources: (1) Complete, (2) restricted (by E. N. Kavanagh, chief of range management):

The forage resources in the vicinity of Mount Hood have been used for the grazing of stock for a period of nearly 50 years. The earliest use was at the lower elevations and originally was principally with cattle. Later sheep were introduced and in the ensuing years an increasing proportion of the grazing use has been by that class of stock. In the initial stages of forest administration, some twenty-odd years ago, when the ranges were overstocked and there was lack of administrative control, damage from grazing occurred. On this account requests were made by the irrigation interest of the Hood River Valley to restrict the grazing of stock on the north slopes of the mountain and for 20 years this area has not been used for grazing purposes. The portion of the Bull Run watershed, reserved by the city of Portland, which lies within the delineated area, has never been used

for the grazing of stock for fear of possible contamination of the water supply of the city of Portland. On the south side of the mountain as recreational use has expanded grazing use has been restricted accordingly.

Under the administrative control involved in Forest Service administration it has been possible to provide adequate restraint of stock being grazed and the use of the range so as to keep in proper balance all of the uses for which the territory is valuable. The Forest Service has encouraged the use of this territory by sheep in preference to cattle primarily because it is easier and less expensive to control sheep than cattle and there is greater opportunity to avoid conflicts with other uses of the region. While full use of the resources in this territory would be economically desirable from the standpoint of the agricultural interests this has been denied in order to avoid possible damage to other interests where that appeared probable. It is understood in connection with the grazing of the area as a whole that if and when more dominant and worth-while uses develop further restrictions or closures might be imposed as circumstances warranted.

These ranges are used to furnish pasturage during the summer months, while crops are being raised and harvested on the privately owned lands in the adjacent valleys. Use of this range is an integral part under present day conditions of agricultural operations in the surrounding territory and of vital importance to the owners of approximately 40,000 acres of taxable property. It has not been deemed desirable to make any wholesale exclusion of stock, as it is plainly apparent that circumstances as yet do not justify such action because of any conflict with other uses and because of the economic importance of the forage resources in connection with property values in excess of \$300,000 dependent thereon.

With carefully worked out plans for the handling of the various resources in the whole territory under consideration and a proper understanding on the part of all concerned of the economic and recreational demands it is believed that there will be no occasion for any extensive closures of the area or added restrictions. However, provision for partial closures and special restrictions should be recognized in the final plans for the development and use of this region.

(c) Development of reservoir possibilities, power, and irrigation (by Regional Engineer P. H. Dater):

(1) COMPLETE

Group 1, northwest of Mount Hood (Lost and Wahtum Lakes).— Available precipitation and stream flow records indicate that for power there would be a moderate demand on the reservoirs during July, a heavy demand during August and September, and a small demand during October. There would be a further small demand during two or three winter months. A complete utilization of power resources would require for an average year a draw down prior to September 1 of, at Wahtum Lake, 25 feet; at Lost Lake, about 12 feet.

The Vorse application calls for the use of 25 second-feet of water. Such use would make a draw down prior to September 1 of 6 to 10 feet in each lake, or of 25 feet in Wahtum Lake and about 5 feet in Lost Lake.

The reservoir use of Lost Lake as proposed by the city of The Dalles would cause a draw down prior to September 1 for an average year of about 10 feet. Years of low runoff would increase this draw down materially, although the maximum of 25 feet should not occur before October.

Mention is made of the draw down prior to September 1 for the reason that applicants for both power and irrigation (and domestic supply) have stressed the limited draw down prior to the close of the tourist and recreational season. Such stress assumes that only limited damage to scenic features would result during the summer season. Proponents of the projects assume that a new shore line can be established and then if the summer fluctuation is not too great, only a limited scenic damage would result. It is believed that these assumptions are in error basically. The beauty of Lost Lake lies largely in the natural wooded shore line. Raising the water level 20 or 30 feet will destroy the frame of the picture. The raised level would flood land available for recreational use and it is doubtful if a new shore line could be made that would approach the natural one in beauty. Certainly a strip of uncovered mud shore line will destroy the beauty and charm for which the lake is now famous. Maps of the lake shore indicate that the width of the uncovered mud strip would vary from 100 feet to in excess of 300 feet. It is probable that under working conditions the width of the strip prior to September 1 would be a little less than one-half the above figures. The basic condition is not so much that a limited draw down would occur during the summer season but rather that raising the level 20 or 30 feet would seriously alter appearances and reduce the amount of usable land. Scenic values would be seriously impaired and it is these values that are predominant.

The Mount Hood committee in its report of August 29, 1928, to the Secretary of Agriculture recommended that "No use be made, at this time, of any of the lakes in the Mount Hood area which would make any perceptible change in their shore lines, if such change would seriously impair their scenic and recreational values." In a letter to the committee dated October 19, 1928, the Secretary expressed his agreement with the recommendation, but called attention to the fact that final jurisdiction in power matters lay with the Federal Power Commission. Also that the question of the use of Lost Lake as a source of water for The Dalles involved considerations of rights granted by Congress in a general right-of-way act. Both power and water supply projects are subject to State laws governing the appropriation, diversion, and use of water.

Group 2, southwest slopes of Mount Hood.—Salmon River Meadows Reservoir is just outside the area designated as the "Mount Hood area." The diversion of flood waters from the streams on the southwest slope of the mountain would not affect recreational uses adversely. Diversion of the natural summer and early fall flow from these streams would affect recreation values seriously. In the case of the application of the Oregon-California Hydroelectric Co., the Federal Power Commission placed a requirement in the permit which reads that any license granted "shall contain a provision for the protection of summer residences, resorts, and other recreational and commercial establishments, which provision shall be essentially to the effect that no water shall be diverted from Zigzag River and/or its

tributaries when such a diversion would reduce the flow in said Zigzag River at Rhododendron below the average discharge for the period between June 15 to September 15, both inclusive, said average discharge to be determined during the term of this permit and specified in the license."

This provision is inadequate in that it does not guarantee low-water flow in the several individual streams. Collective flow at Rhododendron might be an average summer flow even though certain individual streams might be entirely diverted. To properly protect recreational uses and interests the requirement should be that there be no diversion from any stream when the flow in the stream is below its average summer flow. There should be a reasonable amount of water in each stream at all times in order to protect recreational interests.

(2) RESTRICTED

Group 1, northwest of Mount Hood.—Any change in Lost and Wahtum Lakes will effect scenic values. The chief value of the region is scenic and recreational. Power and irrigation values exist but they appear to be secondary. Power and irrigation (including domestic water supply) can be obtained elsewhere or by other means. Lost Lake is the only lake available in the Mount Hood area accessible to the Loop Road. Wahtum Lake is less accessible, but is too small to be of value as a separate development.

Group 2, southwest slopes of Mount Hood.—Diversion of flood waters of Zigzag and Little Zigzag Rivers and Sand and Still Creeks would not be objectionable. Diversion of any summer flow is decidedly objectionable. The streams should not be completely diverted at any season. Diversion of flood waters would provide a supply for Mud Creek or Salmon River Meadows Reservoirs.

d. Since it is not believed that any mineral exists in the region under discussion, I do not think that a full development of the mineral resources will have any effect whatever on the recreational, inspirational, or educational values thereof.

e. The cultivation of lands adapted to crop production would have no effect upon the development of "recreational, inspirational, and educational values." There are no public lands within the area being studied which are adapted to crop production. The production of crops on patented lands would, of course, not be affected by any use the Forest Service might make of the national forest lands.

Effect upon recreational, inspirational, and educational values of additional (f) hotels, resorts; (g) roads; (h) trails; (i) development of mechanical means of transportation (by T. H. Sherrard, forest supervisor):

These effects are very much a matter of individual opinion. To a certain type of mind the effect of any recreational development other than the building of trails is damaging to inspirational values. Hardly anyone objects to the building of trails for the protection of the forest from fire, and yet there are people who regret the change in conditions which has followed the building of the Columbia River Highway and the Mount Hoop Loop. The influx of tourists which these highways have brought into the region has spoiled their enjoyment of it, and they avoid it. The region is certainly not so attractive to the few who would be hardy enough and able to equip themselves to enjoy it

in its natural state. After all such people are few, limited to the pioneer type among such classes as the trapper, berry picker, mountain climber, and hunter. Just as the country everywhere has lost something of its charm since the advent of the automobile, so this region is no longer the haven it once was to the man who likes to get as far away from civilization as possible. However, hundreds of thousands of people enjoy the scenic attractions of the region now, while comparatively only a few penetrated it before the roads were built. If additional conveniences and comforts were provided more people would avail themselves of the opportunity provided to enjoy the attractions of the region under the conditions to which they are accustomed, and which have become necessary to their enjoyment of any region. A place to eat and to sleep provided by some one besides themselves at a price so that they may enjoy the forest unhampered by mechanics and of taking care of themselves under unaccustomed conditions. From the standpoint of the greatest good to the greatest number there can be no doubt that additional resorts, roads, and trails would increase the opportunity for profiting from the recreational, inspirational, and educational values of the region. If constructed, the mechanical contrivances for reaching the top would not materially alter the physical appearance of the mountain, except at fairly close range, such as the Cloud Cap Inn. The district forester believes the result inspirationally would be to remove Mount Hood from the class of relatively inaccessible, remote peaks with the attendant spiritual, inspiring element now present in the minds of all people who think on these things, and make of it an area conquered by man's contrivances and amusement facilities.

Easy access to the top, on the other hand, should result in inspiring views of nature's workings in the formation of mountain ranges and large volcanic peaks, as St. Helens, Rainier, Adams, Jefferson, possibly others; of lakes and watercourses dropping from the higher elevations; and of forests. The spectacular view should be an inspiration tending to broaden the mind of the beholder, or of such beholders as do not regard the ascent primarily as "a stunt." The educational effect of easy access should be helpful as regards the part played by the national forests in watershed protection and forestry, and the problems of forest fires. Employees of the concessionaire could be schooled in educational work of this nature.

The cableway should greatly increase recreational use of the mountain top. To the mountain climber, the lure of the Mount Hood climb will be lessened. The exclusiveness of the mountain top will have departed and with it some of the desire for its conquest by physical exertion. The cableway conveniences on top would, however, be a boon to the climber who is now in want of shelter, adequate food, and comforts.

(f), (a) Effect upon local welfare, community, institutional, industrial, and individual, if each or all of above uses were prohibited or curtailed (by Geo. L. Drake, logging engineer):

Of the timbered areas discussed in this report, only two contain timber in sufficient volume to seriously affect established industries or settlements dependent on this timber for their future life. The West and Middle Fork units contain 550,000,000,000 board feet of Government timber that is tributary to the mill of the Oregon Lumber Co. at Dee. The ownership by the company of timber

lands intermingled with these Government lands, indicates that this mill was built on the assumption that all the Government timber logically tributary to it, would be cut by this mill. The layout is such that the Government timber can be best operated by this company. The withdrawal of this timber from cutting will work a decided hardship to this company, as it will reduce the available timber supply from 720,000,000,000 to 170,000,000,000. Besides reducing the amount of timber available to the mill, which will shorten its life by some 15 years, thus increasing the depreciation for both the mill and logging equipment. The withdrawal of our timber will greatly increase the cost of logging the private timber, as the roads necessary to tap this timber will be depreciated over 170,000,000,000 instead of 720,000,000,000; in fact, it is questionable if the company could operate some of their holdings without the adjacent Government timber. The mill and logging plant represent an investment of some \$450,000. The mill which is electrically driven, was built in 1914, and is in excellent condition. There is no reason why this mill with normal replacements of machinery can not be efficiently operated for another 20 years. In addition to the loss that will be suffered by the Oregon Lumber Co. in case the life of the mill is shortened by the withdrawal of the Government timber from sale, the company will lose heavily in loss of tonnage to the Mount Hood railroad which they own and which is dependent for a considerable share of its revenue from lumber shipments originating at the Dee mill. With the heavy competition from auto trucks, it is a question whether the railroad could continue to function without this lumber tonnage. How seriously the discontinuance of this railroad would affect farm values in the Hood River Valley I am unable to state.

Based on going stumpage prices, which gives conservative values, as future sales would likely be made at higher rates, the withdrawal of this timber will result in a loss of revenue to the Government of approximately \$550,000 of which \$137,500 would go to the county. In addition to this loss in revenue, the county would lose in wages a pay roll conservatively estimated at \$9 per thousand, or a total of \$4,950,000, a considerable share of which is spent locally. Some of the men employed by the company have small ranches in the valley.

(b) Effect upon local welfare, community, institutional, industrial, and individual, if each or all of the uses were prohibited or curtailed (by E. N. Kavanagh, chief of grazing):

The Forest Service requires, in connection with the granting of permits to graze stock upon the national forests, certain obligations from the owners of such stock. These obligations have been developed as a result of experience over many years and are for the protection of all of the resources of whatever kind upon the territory being used for grazing purposes. It is felt that these obligations are such as to insure adequate protection of the natural resources but at the same time permissible of such use as will result in the removal each year of vegetation which would otherwise become inflammable and a fire menace and of translating this vegetation into wool and mutton, marketable products which make for the success and welfare of the agricultural interests dependent upon the national forest ranges for summer pasturage of their stock. Wholesale exclusion or prohibition of grazing within the dependent area it is thought would not enhance the value of the region from a recreational standpoint

and would unquestionably work a very severe hardship upon the individual stock owners and indirectly upon the communities and counties dependent to a greater or less degree upon the taxes and business derived through the livestock industry. There is insufficient summer range in this whole region for the number of stock that can be cared for during the rest of the year and any restrictions upon use of summer range reacts directly upon property and business values in the dependent territory.

It may eventually be desirable to close certain allotments or portions thereof if recreational use increases and if this does become necessary provision should be made for ample notice to the parties concerned in order that they may be able to adjust their financial and other affairs accordingly. This will prevent any undue hardship upon either the financial or agricultural interests in the territory involved. With due appreciation of the relation of recreation to the economic welfare of the region and the disappearance of the prejudices originally engendered by improper handling of stock under the conditions that prevailed some 20 years ago, it is believed that it is entirely possible to work out harmoniously a full and satisfactory utilization of all the varied resources of the territory involved.

(f), (c) Effect upon local welfare, community, institutional, and individual, if each or all of the above water uses were prohibited or curtailed (by P. H. Dater, regional engineer):

Group 1, northwest of Mount Hood.—Oregon laws of 1915 withdrew from appropriation the waters of 23 streams along the Columbia River Highway in Multnomah and Hood River Counties. The withdrawal included Eagle Creek, the East Fork of which originates in Wahtum Lake. The Vorse power application states that application No. 4041 for appropriation of the waters of East Fork was filed with the State engineer January 1, 1915. The action of the 1915 legislature is evidence of a recognition that scenic and recreational values of these streams are predominant over power or irrigation uses. Future applications on Eagle Creek or Wahtum Lake can not be accepted by the State engineer.

As previously stated, Lost Lake is the only lake area adjacent to the Mount Hood Loop Highway. Its scenic and recreational values appear to predominate. Prohibition of the lake as a storage reservoir appears to be in public interest. There are many other power sites available. Oregon and Washington are rich in power resources. Lost Lake as a scenic and recreational asset stands alone.

The application of the city of The Dalles for reservoir use of Lost Lake is ostensibly for domestic supply. Actually orchard irrigation appears to be contemplated. Thirty second-feet would furnish a domestic and lawn irrigation supply for a city several times the size of The Dalles. Use of Lost Lake as a reservoir is not an essential part of the Cold Spring Creek water supply. Water rights may be purchased. Steam power may be developed to replace the water power during midsummer. These and other alternatives might increase the cost of the project. They would not make it impossible.

Further, there are other possible sources of water for The Dalles. Storage on Mill Creek, Dog River, or other streams is feasible. Such storage would furnish ample domestic supply. The city has an

existing pumping plant from wells for use during the low water season. Such supply can be readily increased. A detailed report on sources of water supply suggested for or considered by The Dalles was made on August 20, 1928.

Prohibition of the use of Lost Lake as a reservoir does not deprive The Dalles of a water supply. There are other sources. It does not even prevent the use of Cold Spring Creek, since existing water rights may be purchased or power substituted during low water. Lessened cost of irrigation water appears to be of less beneficial public benefit than the predominant scenic and recreational values of the lake.

Group 2, southwest slopes of Mount Hood.—Storage is an exceedingly important feature of hydroelectric development. Storage of flood waters on Mud Creek or Salmon River would increase power values on Salmon and Sandy Rivers about 8,000 horsepower. The power project is not particularly attractive at present, but it may become valuable in the future. Flood storage would be a valuable asset. Without storage the project is not attractive. In the long run prohibition of storage might be a considerable industrial and community loss.

Prohibition of diversion from the various streams during the summer is distinctly in community interest as affecting recreational matters. It would not be a hardship on industrial interests, since storage of flood waters only is an essential feature of the economics of the power project.

Mining uses, by W. M. H. Woodward, mineral examiner:

(d) I do not think there will ever be any mining in the region, whether mining is prohibited or permitted, hence the prohibition of mining in this area would probably have no effect whatever upon local welfare. About the only effect of such prohibition will be the prevention of the fraudulent location of strategic areas in order to obtain color of title to use the land for other purposes without submitting to the regulations which are necessary for the public welfare. Possibly this could be accomplished as effectually by a separation of mineral and surface rights so that a mineral location could not be used as a basis for an inartistic hot dog stand and filling station on a spot badly needed by the public for a camp ground. The prosperity of the country is so intimately bound up in the full development of its mineral resources that the absolute prohibition of this development over a large area is not a good precedent, though I believe it would make no difference in this particular case.

The oil question is a somewhat different matter. The area within which oil prospecting is likely to occur is practically all alienated and is therefore beyond Government control. No great hardship would result if oil prospecting permits are refused in the Columbia Gorge, but should there be a discovery there, the developments on alienated land would eventually ruin any recreational value which the productive portion might have, and the Government would do well to get what royalties it can before the oil is drained off through the adjoining alienated land. I would therefore recommend that no oil prospecting permits be issued but that leasing be permitted in case a producing field is developed on adjacent alienated land.

(f) *Effect upon local welfare of curtailment.*—In other regions where tourists have been attracted in large numbers increased prosperity

of the local communities has always resulted. There is no reason to suppose that different results would follow the stimulation and increase of tourist travel in the Mount Hood region.

People near the region would undoubtedly benefit from increased opportunity for inexpensive vacation trips, while residents in and adjacent to the region would benefit from increased markets for their products and increased opportunity for contact with the outside world.

JULY 8, 1929.

Statements regarding effect of various uses of resources or various developments seem well grounded.

C. M. GRANGER, *District Forester.*

APPENDIX

The following plant list is a copy of a list prepared by Thomas Howell, a pioneer botanist for the Mount Hood region. It appeared in Mazama, A Record of Mountaineering in the Pacific Northwest, volume 1, No. 1, pages 28-48, 1896. While not complete and somewhat out of date, it is the only list available and should be useful to any student of the Mount Hood area:

RANUNCULACEAE

Has 10 species belonging to 7 genera as follows:

- Anemone (1)—
 - occidentalis*, Watson.
 - Drummondii*, Watson.
 - Oregana*, Gray.
 - deltoidea*, Hook.
- Trautvetteria* (2)—
 - grandis*, Nutt.
- Ranunculus* (3)—
 - Eschscholtzii*, Schlecht.
- Caltha* (4)—
 - biflora*, DC.
- Cimicifuga* (5)—
 - laciniata*, Watson.
- Aconitum* (6)—
 - An undetermined species.
- Actaea* (7)—
 - arguta*, Nutt.

BERBERIDAGEAE

Has one species and one genus as follows:

- Berberis* (8)—
 - nervosa*, Pursh.

NYMPHAEACEAE

Has one species and one genus as follows:

- Nuphar* (9)—
 - advena*, Ait.

CRUCIFERAE

Has five species and three genera as follows:

- Arabis* (10)—
 - Lyallii*, Watson.
 - platysperma*, Gray.
- Cardamine* (11)—
 - Lyallii*, Watson.
 - pratensis*, var.
- Thlaspi* (12)—
 - alpestre*, L.

VIOLACEAE

Has four species and one genus as follows:

- Viola* (13)—
 - orbiculata*, Dougl.
 - palustris*, L.
 - Macloskeyi*, Lloyd.
 - glabella*, Nutt.

CARYOPHYLLACEAE

Has five species and two genera:

Silene (14)—

Suksdorfii, Robinson.

Douglasii, Hook.

Arenaria (15)—

capillaris, Poir.

biflora, var. *obtusa*, Watson.

verna, var. *hirta*, Watson.

PORTULACACEAE

Has three species and two genera.

Montia (16)—

Sibirica, Howell.

asarifolia, Howell.

Spraguea (17)—

caudicifera, Howell.

HYPERICACEAE

Has two species and one genus:

Hypericum (18)—

Scouleri, Hook.

anagalloides, C. & S.

OXALIDACEAE

Has two species and one genus:

Oxalis (19)—

Oregana, Nutt.

trilliifolia, Hook.

CELASTRACEAE

Has one species and one genus:

Pachystima (20)—

Myrsinites, Raf.

RHAMNACEAE

Has two species and one genus:

Ceanothus (21)—

sanguineus, Pursh.

velutinus, Dougl.

ACERACEAE

Has two species and one genus.

Acer (22)—

circinatum, Pursh.

glabrum, Torr.

LEGUMINOSAE

Has six species and two genera:

Lupinus (23)—

rivularis, Dougl.

sericeus.

var. *montanus*, Howell.

laxiflorus, Dougl.

undertermined species.

Lyallii, Gray.

Lathyrus (24)—

palustris, L.

ROSACEAE

Has 16 species and 8 genera:

- Spiraea (25)—
 - chamaedrifolia*, L. ?
 - Menziesii*, Hook.
- Lutkea (26)—
 - pectinata*, Hook.
- Rubus (27)—
 - spectabilis*, Pursh.
 - ursinus*, Cham. & Schlecht.
 - pedatus*, Smith.
 - lasiococcus*, Gray.
- Fragaria (28)—
 - vesca*, L.
 - Californica*, C. & S.
- Potentilla (29)—
 - glandulosa*.
 - var.
 - gelida*, C. A. Mayer.
 - palustris*, Scop.
- Sanguisorba (30)—
 - microcephala*, Presl.
- Rosa (31)—
 - gymnocarpa*, Nutt.
- Sorbus (32)—
 - sambucifolia*, Roem.
 - occidentalis*, Greene.

SAXIFRAGACEAE

Has 15 species and 6 genera:

- Saxifraga (33)—
 - Tolmiei*, T. & G.
 - stellaris*, L.
 - Oregana*, Howell.
- Tiarella (34)—
 - unifoliata*, Hook.
- Mitella (35)—
 - Breweri*, Gray.
 - pentandra*, Hook.
 - Hallii*, Howell.
- Heuchera (36)—
 - glabra*, Willd.
- Parnassia (37)—
 - fimbriata*, Koenig.
- Ribes (38)—
 - lacustre*,
 - var.
 - bracteosum*, Dougl.
 - acerifolium*, Howell.
 - an unidentified species.
 - viscosissimum*, Pursh.

CRASSULACEAE

Has two species and two genera:

- Sedum (39)—
 - divergens*, Watson.
- Cotyledon (40)—
 - Oregonensis*, Watson.

DROSERACEAE

Has two species and one genus:

- Drosera (41)—
 - Anglica*, Hudson.
 - rotundifolia*, L.

ONAGRACEAE

Has 10 species and 3 genera:

- Epilobium (42)—
 - adenocaulon, Hausskn.
 - glandulosum, Lehm?
 - glaberrimum, Barbey.
 - Hornemannii, Reichenb.
 - anagallidifolium, Lam.
 - alpinum, L.
 - clavatum, Trelease.
- Gayophytum (43)—
 - diffusum, T. & G.
 - racemosum, T. & G.
- Circaea (44)—
 - Pacifica, Asch. & Mag.

UMBELLIFERAE

Has four species and four genera:

- Cicuta (45)—
 - maculata, L.
- Osmorhiza (46)—
 - nuda, Torr.
- Angelica (47)—
 - arguta, Nutt.
- Peucedanum (48)—
 - Martindalei.
 - var. angustatum, C. & R.

ARALIACEAE

Has one species and one genus:

- Fatsia (49)—
 - horrida, B. & H.

CORNACEAE

Has one species and one genus:

- Cornus (50)—
 - Canadensis, L.

CAPRIFOLIACEAE

Has three species and three genera:

- Viburnum (51)—
 - pauciflorum, Pylaie.
- Linnaea (52)—
 - borealis.
 - var. longiflora, Torr.
- Lonicera (53)—
 - involucrata, Banks.

RUBIACEAE

Has two species and one genus:

- Galium (54)—
 - bifolium, Watson.
 - triflorum, Michx.

VALERIANACEAE

Has one species and one genus:

- Valeriana (55)—
 - sylvatica, Banks.

COMPOSITAE

Has 22 species and 10 genera:

- Solidago (56)—
 - humilis.
 - var. nana, Gray.
 - elongata, Nutt.
- Aster (57)—
 - modestus, Lindl.
 - Fremonti, Gray.
 - ledophyllus, Gray.
 - glaucescens, Gray.
 - pulchellus, Eaton.
- Erigeron (58)—
 - salsuginosus, Gray.
- Antennaria (59)—
 - alpina, Gaertner.
 - dioica.
 - var. rosea, Eaton.
- Anaphalis (60)—
 - margaritacea, B. & H.
- Arnica (61)—
 - latifolia, Bong.
 - amplexicaulis, Nutt.
- Senecia (62)—
 - triangularis, Hook.
 - aureus, L.
 - subnudus, DC.
- Apargidium (63)—
 - boreale, T. & G.
- Hieracium (64)—
 - albiflorum, Hook.
 - gracile, Hook.
- Troximon (65)—
 - aurantiacum, Hook.
 - undetermined species.

VACCINIACEAE

Has four species and one genus:

- Vaccinium (66)—
 - occidentale, Gray.
- Myrtillus.
 - var. microphyllum, Hook.
 - mytilloides, Hook.
 - parvifolium, Smith.

ERICACEAE

Has 11 species and 6 genera:

- Arctostaphylos (67)—
 - Uva-ursi, Spreng.
 - Nevadensis, Gray.
- Gaultheria (68)—
 - Myrsinites, Hook.
 - ovatifolia, Gray.
 - Shallon, Pursh.
- Cassiope (69)—
 - Mertensiana, Don.
- Bryanthus (70)—
 - empetriformis, Gray.
 - glanduliflorus, Gray.
- Menziesia (71)—
 - ferruginea, Smith.
- Rhododendron (72)—
 - albiflorum, Hook.
 - Californicum, Hook.

PYROLACEAE

Has six species and three genera:

- Chimaphila (73):
 - umbellata, Nutt.
 - Menziesii, Spreng.
- Moneses (74)—
 - grandiflora, Salisb.
- Pyrola (75)—
 - secunda L.
 - bracteata, Hook.
 - picta, Smith.

MONOTROPACEAE

Has three species and three genera:

- Monotropa (76)—
 - uniflora, L.
- Hypopitys (77)—
 - multiflora.
- Newberrya (78)—
 - congesta, Torr.

PRIMULACEAE

Has two species and two genera:

- Dodecatheon (79)—
 - tetrandrum, Suksdorf.
- Trientalis (80)—
 - arctica, Fisher.

GENTIANACEAE

Has three species and two genera:

- Gentiana (81)—
 - calycosa, Griseb.
 - sceptrum, Griseb.
- Menyanthes (82)—
 - trifoliata, L.

POLEMONIACEAE

Has four species and three genera:

- Phlox (83)—
 - diffusa, Benth.
- Gilia (84)—
 - debilis, Watson.
- Polemonium (85)—
 - pulchellum, Bunge.
 - occidentale, Greene.

HYDROPHYLLACEAE

Has one species and one genus:

- Phacelia (86)—
 - nemoralis, Greene.

BORRAGINACEAE

Has one species and one genus:

- Mertensia (87)—
 - paniculata, Don.

SCROPHULARIACEAE

Has 11 species and 6 genera:

- Chelone (88)—
 - nemorosa, Dougl.
- Pentstemon (89)—
 - Menziesii, Hook.
 - confertus, Dougl.
 - procerus, Dougl.

Has 11 species and 6 genera—Continued.

- Mimulus (90)—
 Lewisii, Pursh.
- Veronica (91)—
 alpina, L.
- Castilleja (92)—
 Suksdorfii, Gray.
 parviflora, Bong.
- Pedicularis (93)—
 Groenlandica, Ritz.
 racemosa, Dougl.
 bracteosa, Benth.

POLYGONACEAE

Has five species and three genera:

- Oxyria (94)—
 digyna, Hill.
- Polygonum (95)—
 minimum, Watson.
 boreale, Small.
- Eriogonum (96)—
 umbellatum, Torr.
 ovalifolium, Nutt.

RETULACEAE

Has one species and one genus:

- Alnus (97)—
 incana.
 var. virescens, Watson.

SALICACEAE

Has two species and one genus:

- Salix (98)—
 glauca.
 var. villosa, And.?
 lasiolepis, Benth.

CUBULIFERAE

Has one species and one genus:

- Castanopsis (99)—
 chrysophylla A. DC.

ORCHIDACEAE

Seven species and four genera:

- Corallorhiza (100)—
 multiflora, Nutt.
 mertensiana, Bong.
- Habenaria (101)—
 leucostachys, Watson.
 gracilis, Watson.
- Spiranthes (102)—
 Romanzoffiana, Cham.
- Listera (103)—
 cordata, R. Br.
 convallarioides, Nutt.

LILIACEAE

Fourteen species and 11 genera:

- Maianthemum (104)—
 bifolium.
 var. dilatatum, Wood.
- Smilacina (105)—
 racemosa, Deaf.
 sessilifolia, Watson.

Fourteen species and 11 genera—Continued.

- Lillium (106)—
Washingtonianum, Kellogg.
- Erythronium (107)—
montanum, Watson.
grandiflorum, Pursh.
- Calochortus (108)—
undetermined species.
- Streptopus (109)—
roseus, Michx.
- Clintonia (110)—
uniflora, Kunth.
- Trillium (111)—
ovatum, Pursh.
- Veratrum (112)—
viride, ait.
Californicum, Durand.
- Tofieldia (113)—
glutinosa, Willd.
- Xerophyllum (114)—
tenax, Nutt.

ARACEAE

Has one species and one genus:

- Lysichiton (115)—
Kamtschatcensis, Schott.

NAIADACEAE

Has one species and one genus:

- Potamogeton (116)—
rufescens, Schrad.

JUNCACEAE

Has four species and two genera:

- Luzula (117)—
spadicea,
var. melanocarpa, Meyer.
- Juncus (118)—
Drummondii, E. Meyer.
Parryi, Engelm.
Mertensianus, Bong.

CYPERACEAE

Has 10 species and 3 genera:

- Eriophorum (119)—
polystachyon, L.
- Dulichium (120)—
spathaceum, Pers.
- Carex (121)—
Mertensii, Prescott.
atrata, L.
invisa, Bailey.
frigida, All.
inops, Bailey.
Breweri, Booth.
canescens, L.
festiva, Dew.

GRAMINEAE

Has 18 species and 11 genera:

- Phleum (122)—
alpinum, L.
- Vilfa (123)—
gracillima.
- Agrostis (124)—
aequivalvis, Trin.
Oregana, Vasey.
foliosa, Vasey.
attenuata, Vasey.
- Cinna (125)—
pendula, Trin.
- Deschampsia (126)—
latifolia, Vasey.
- Trisetum (127)—
cernuum, Trin.
subspicatum, Beauv.
var. molle, Gray.
- Poa (128)—
purpurascens, Vasey.
- Glyceria (129)—
nervata, Trin.
- Festuca (130)—
ovina, L.
var. glacialis, Vasey.
Howellii, Vasey.
- Bromus (131)—
ciliatus.
var. pauciflorus, Scrib.
- Elymus (132)—
Sitanion, Schultz.

CONIFERAE

Has 17 species and 9 genera:

- Juniperus (133)—
nana, Willd.
- Chamaecyparis (134)—
Nutkatensis, Spach.
- Thuja (135)—
plicata, Lamb.
- Abies (136)—
nobilis, Dougl.
amabilis, Dougl.
lasiocarpa, Nutt.
- Pseudotsuga (137)—
mucronata, Raf.
- Tsuga (138)—
Mertensiana, Carr.
Pattoniana, Engelm.
- Picea (139)—
pungens, Engelm.
species undetermined.
- Larix (140)—
occidentalis, Nutt.
- Pinus (141)—
albicaulis, Engelm.
monticola, Dougl.
contorta, Dougl.
Murrayana, Balfour.
ponderosa, Dougl.

OPHIOGLOSSACEÆ

Has one species and one genus:

Botrychium (142)—
ternatum, Swartz.

FILICES

Has 15 species and 11 genera:

Polypodium (143)—
falcatum, Kellogg.
Cheilanthes (144)—
gracillima, Eaton.
Pellaea (145)—
densa, Hook.
Cryptogramma (146)—
acrostichoides, R. Br.
Pteris (147)—
aquilina.
var. lanuginosa, Bong.
Adiantum (148)—
pedatum, L.
Lomaria (149)—
spicant, Desv.
Asplenium (150)—
Filix-foemina, Bernh.
Trichomanes, L.
Phegopteris (151)—
Dryopteris, Fee.
Aspidium (152)—
spinulosum.
var.—
Lonchitis, Swartz.
munitum, Kaulf.
aculeatum, Swartz.
Cystopteris (153)—
fragilis, Bernh.

LYCOPODIACEÆ

Has two species and one genus:

Lycopodium (154)—
clavatum, L.
annotinum, L.



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